



# United States Department of the Interior

Fish and Wildlife Service  
Montana Ecological Services Office  
585 Shephard Way, Suite 1  
Helena, Montana 59601-6287



**In Reply refer to:**

File:M19 Bitterroot National Forest

06E11000-2021-F-0020 Bitterroot Forest Plan Amendment- Grizzly Bears

July 8, 2021

Matthew Anderson, Forest Supervisor  
Bitterroot National Forest  
1801 North First Street  
Hamilton, Montana 59840

Dear Mr. Anderson:

The U.S. Fish and Wildlife Service (Service) has reviewed your October 6, 2020 biological assessment regarding the effects of the continued implementation of the Bitterroot National Forest Plan (Forest Plan), with the proposed Forest Plan Amendment regarding elk standards and the Forest Travel Plan, on the Bitterroot National Forest (Forest). The biological assessment analyzed the effects of the Forest Plan on the federally listed grizzly bear (*Ursus arctos horribilis*). The Forest made a determination of *may affect, likely to adversely affect* for grizzly bears. Additional information was received through January 21, 2021.

The attached biological opinion addresses the effects of the Forest Plan on the listed grizzly bear, and is based on information provided for this action in the biological assessment prepared by Justin Martens, Wildlife Biologist. The biological opinion was prepared in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). A complete project file of this consultation is on file at the Service's Montana Field Office.

Thank you for your continued assistance in the conservation of endangered, threatened, and proposed species. If you have questions or comments related to this consultation, please contact Carly Lewis at (406) 329-3091 or [carly\\_lewis@fws.gov](mailto:carly_lewis@fws.gov).

Sincerely,

for Jodi L. Bush  
Office Supervisor

# **ENDANGERED SPECIES ACT SECTION 7 CONSULTATION**

## **BIOLOGICAL OPINION**

**on the**

### **Effects of Continued Implementation of the Bitterroot National Forest Plan, Travel Management Plan, and Proposed Elk Amendment on Grizzly Bears**

Agency:	U.S. Department of Agriculture
Forest Service	Bitterroot National Forest
Hamilton, Montana	
Consultation Conducted by:	U.S. Fish and Wildlife Service
	Montana Field Office
	Helena, Montana
Date Issued:	July 8, 2021

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## **I. INTRODUCTION**

This biological opinion was prepared by the U.S. Fish and Wildlife Service (Service) and analyzes the effects of the continued implementation of the Bitterroot National Forest Plan (Forest Plan) on the Bitterroot National Forest (Forest) on grizzly bears (*Ursus arctos horribilis*). Formal consultation was initiated on October 6, 2020, the date the Service received the biological assessment (U.S. Forest Service 2020). We continued to receive information regarding the Forest Plan through January 20, 2021.

Section 7(b)(3)(A) of the Endangered Species Act of 1973, as amended (Act) requires that the Secretary of Interior issue biological opinions on federal agency actions that may adversely affect listed species or critical habitat. Biological opinions determine if the action proposed by the action agency is likely to jeopardize the continued existence of listed species or destroy or adversely modify critical habitat. Section 7(b)(3)(A) of the Act also requires the Secretary to suggest reasonable and prudent alternatives to any action that is found likely to result in jeopardy or adverse modification of critical habitat, if any has been designated. If the Secretary determines no jeopardy, then regulations implementing the Act further require the Director to specify “reasonable and prudent measures” and “terms and conditions” necessary or appropriate to minimize the impact of any incidental take resulting from the action(s).

### **Consultation History**

In the fall of 2017, the Service determined that grizzly bears may be present on the portion of the Forest east of Highway 93 and added them to the Forest’s list of species that may be present. Based on that information, informal consultation began between the Forest and the Service on the effects of the Forest Plan on grizzly bears. On March 15, 2019, the Forest submitted a letter to the Service requesting re-initiation of consultation on the Forest Plan in order to address impacts to grizzly bears given the change of status to ‘may be present’ on that portion of the Forest. On May 13, 2019, we received a final biological assessment (dated May 7, 2019) and request for consultation on the effects of the Forest Plan on grizzly bears (U.S. Forest Service 2019). We issued a biological opinion on the effects of the Forest Plan on grizzly bears on July 1, 2019 that covered effects to bears on the eastern portion of the Forest.

The ESA regulations for interagency cooperation requires federal agencies to request reinitiation of consultation (50 CFR § 402.16) in four different situations where the federal agency retains discretionary involvement or control over the action, or the action is authorized by law and:

- 1) the amount or extent of taking specified in the incidental take statement is exceeded;
- 2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- 3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or
- 4) a new species is listed, or critical habitat is designated that may be affected by the identified action.

Grizzly bears have since been detected in a few areas on the western portion of the Forest that were not previously considered in the 2019 biological opinion (see details below). These sightings have prompted the Fish and Wildlife Service to identify additional areas where grizzly bears “may be present” on the Forest, and to clarify that bears making their way onto the Forest are not considered part of an experimental population. In a letter dated January 21, 2020, the Service determined that:

“the current Endangered Species Act (ESA) section 10(j) rule for grizzly bears in the Bitterroot Grizzly Bear Experimental Population Area (BGBEPA), 50 CFR § 17.84(1), does not apply to grizzly bears that have dispersed into the BGBEPA on their own...[and]...grizzly bears that are present in the BGBEPA are not covered by the 10(j) rule and are considered threatened under the ESA. This means that ESA section 7 consultation obligations apply to proposed federal agency actions that may affect grizzly bear in the BGBEPA (U.S. Department of the Interior, Fish and Wildlife Service 2020b).”

Because the 2019 biological opinion did not consider effects to grizzly bears on the western portion of the Forest, the Forest contacted the Service in February, 2020, regarding the need to reinstitute consultation on the Forest Plan to consider grizzly bears on all portions of the Forest in Montana.

Concurrently, the Forest began pursuing a Forest Plan Amendment to address what it determined were “antiquated standards” regarding elk habitat management on the Forest. During discussions in early consultation regarding this amendment, the two agencies decided it would be both efficient and appropriate to include the Forest Plan Amendment (hereafter, elk amendment) into the reinstitution. The agencies also realized in early consultation discussions that they were remiss in not including the Travel Management Plan for the Forest in the 2019 consultation. The Forest completed the Travel Management Planning Project (hereafter Travel Plan) in 2016, when grizzly bears were still thought to be absent from the Forest U.S. Department of Agriculture 2016a, 2016b).

Thus, this biological opinion supersedes and replaces our 2019 biological opinion on the effects to grizzly bears of the Bitterroot Forest Plan, including the elk amendment and the Travel Plan. The biological assessment (U.S. Forest Service 2020), information in our files, as well as additional information and discussions throughout the informal and formal consultation process were used in the preparation of this biological opinion. A complete project file of this consultation is on file at our office.

Previous consultations on the Forest Plan and Travel Management Plan considered effects to other listed species on the Forest, including Canada lynx (*Lynx canadensis*), bull trout (*Salvelinus confluentus*) and designated critical habitat for bull trout. Canada lynx were previously consulted on for the Forest Plan (Northern Rockies Lynx Management Direction amended to the Forest Plan, U.S. Department of Agriculture 2007a and 2007b) and the Travel Management Planning Process (U.S. Department of Agriculture 2013, U.S. Department of the Interior, Fish and Wildlife Service 2013). Bull Trout were previously consulted on for the Forest Plan (INFISH, U.S. Department of Agriculture 1995) and the Travel Management Planning Project (U.S. Department of Agriculture 2010, U.S. Department of the Interior, Fish and Wildlife Service 2010). We acknowledge that the Forest determined the proposed Forest Plan amendment will have no effect on Canada lynx, bull trout, or designated critical habitat for bull trout, and thus the agencies do not need to consult on these species.

## II. DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the continued implementation of the 1987 Forest Plan, including the proposed amendment regarding elk habitat. The proposed action also includes the continued implementation of the Bitterroot National Forest Travel Plan (U.S. Forest Service 2016a, 2016b).

### Forest Plan

The Forest Plan is the principle long-range guidance document for the Forest, providing direction for project and activity decision making. The Forest Plan provides an integrated plan for land and resource management, articulates goals and objectives, provides the kinds of uses that are suitable for areas of a national forest, management standards and guidelines that apply to different kinds of activities, and the designation of special areas like Research Natural Areas.

For information on Forest Plan direction that may assist in the management of grizzly bears, refer to Appendix B of the biological assessment (U.S. Forest Service 2020). The Forest Plan is considered a framework programmatic action. It does not authorize, fund, or carry out an action but provides direction for future actions that may be authorized, funded, or carried out by the Forest. Therefore, any action subsequently authorized, funded, or carried out under the Forest Plan, will be addressed in subsequent section 7 consultations, as appropriate. If a proposed project is not consistent with the Forest Plan, the project cannot proceed as proposed unless the plan is amended so that the project is consistent with the plan. Activities subsequently authorized, funded, or carried out under the Forest Plan that may affect grizzly bears are described in detail in the biological assessment, which is hereby incorporated by reference (U.S. Forest Service 2020). The Forest estimates that the life of the current Forest Plan is approximately 10 more years.

### Elk Amendment

The Forest Plan includes plan components related to elk habitat management during project planning. The Forest proposes to amend these components with new desired conditions, goals, and guidelines, which will remove existing standards and introduce new components. Part of the original standards pertain to motorized access management, which influences habitat effectiveness for elk as well as habitat for grizzly bears. The amendment will complement the Bitterroot National Forest Travel Plan (U.S. Department of Agriculture 2016a, 2016b).

The proposed amendment will provide the Forest with greater flexibility for managing a mosaic of successional stages to support elk, and evaluating and integrating new science regarding elk disturbance in coordination with Montana Fish, Wildlife, and Parks (MTFWP). The full Amendment language clarifies the substitutions and deletions from the current standards to the new components (U.S. Forest Service 2020, Appendix C).

### Travel Plan

The Forest completed a Travel Management Plan in 2016, before grizzly bears were present on the Forest (U.S. Department of Agriculture 2016a, 2016b). The Travel Plan only includes portions of the Forest that are within Montana, and addresses both non-winter and over-snow motorized vehicle use. The term “winter” generally refers to the period beginning around December 20–21 and ending around March 19–21 (U.S. Forest Service 2020, p. 6). The following brief synopsis summarizes some changes that were made by the decision:

- 1) Decrease by 51 miles (3.5 percent) the miles of roads designated open to highway-legal vehicles, both yearlong and seasonally.
- 2) Decrease by 74 miles (67 percent) the miles of double-track trails designated open to vehicles 50 inches or less in width, yearlong, from 110 miles to 36 miles. Increase by 9 miles (1.5 percent) the miles of double-track trails designated open to vehicles 50 inches or less in width, seasonally.
- 3) Decrease by 291 miles (88 percent) the miles of single-track trails designated open to motorcycles, yearlong, from 330 miles to 39 miles. Increase by 42 miles (55 percent) the miles open seasonally to motorcycles, from 78 miles to 121 miles.
- 4) Authorize 30 miles of existing unauthorized routes, including 19 miles of double-track trails and 11 miles for use as single-track trails (10 miles seasonally, and 1 mile open yearlong).
- 5) Decrease the areas designated open to snowmobile use by 205,141 acres (27 percent).
- 6) Motorized/mechanical transport, including bicycles, is prohibited in the Selway-Bitterroot recommended wilderness area and in the Sapphire and Blue Joint wilderness study areas, for both summer and over-snow use.
- 7) Game retrieval using motorized means off designated routes is not allowed.

While some of these actions only required administrative changes, and thus we able to be accomplished right away, other actions require on-the-ground changes as projects are implemented on the Forest. The Travel Management Plan Record of Decision stated “The physical treatment of closed routes, through decommissioning or placing in long-term storage, will take future administrative access needs, including fire suppression and timber management, into consideration, and will be analyzed in separate, site-specific NEPA projects and decisions when applicable” (U.S. Forest Service 2016b). The Environmental Baseline for this biological opinion incorporates all on-the-ground changes that have been made to date.

### **III. STATUS OF THE SPECIES /CRITICAL HABITAT DESCRIPTION**

#### **A. Range-Wide Status of the Species**

Currently, all grizzly bears in the lower-48 states are protected as threatened. For information on the status of grizzly bears, including species description, life history, and range-wide status and distribution, refer to the Grizzly Bear Recovery Plan (U.S. Fish and Wildlife Service 1993), the Grizzly Bear 5-Year Review (U.S. Fish and Wildlife Service 2011b), the grizzly bear recovery program 2019 annual report (U.S. Fish and Wildlife Service 2020), the NCDE Grizzly Bear conservation strategy (NCDE Subcommittee 2000), Grizzly bear demographics in the NCDE (Costello et al. 2016), NCDE grizzly bear population monitoring team annual report 2019 (Costello and Roberts 2020), the Greater Yellowstone Ecosystem conservation strategy (U.S. Fish and Wildlife Service 2016), the Yellowstone Grizzly Bear Investigations 2018 (van Manen et al. 2019), the interagency grizzly bear study team 2019 annual report summary (IGBST 2020), the Cabinet-Yaak Grizzly Bear Recovery Area 2019 Research and Monitoring Progress Report (Kasworm et al. 2020a), Density, distribution, and genetic structure of grizzly bears in the Cabinet-Yaak Ecosystem (Kendall et al. 2016), and the Selkirk Mountains Grizzly Bear Recovery Area 2019 Research and Monitoring Progress Report (Kasworm et al. 2020b). These documents (referenced here), include the best available science regarding the status and distribution of grizzly bears and are incorporated by reference.



## **B. Status of Critical Habitat**

No critical habitat has been designated for grizzly bears.

## **IV. ENVIRONMENTAL BASELINE**

Under the provisions of section 7(a)(2), when considering the “effects of the action” on listed species, the Service is required to consider the environmental baseline. Regulations implementing the Act (50 C.F.R. § 402.02 as revised by 84 FR 44976 in 2019) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in progress. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency’s discretion to modify are part of the environmental baseline.

### **A. Action Area**

The action area is the portion of the administrative boundary of the Bitterroot National Forest that falls within the state of Montana (U.S. Forest Service 2020, Appendix A, Map 1). Within the 1,195,544 acre action area (approximately 72% of the total Bitterroot National Forest), private and state lands are interspersed with National Forest System (NFS) lands (see Table 1 in the BA, p.8-9, U.S. Forest Service 2020). Only the NFS lands in the action area are included in the analysis of direct and indirect effects, whereas all land ownerships within the action area are included in the analysis of cumulative effects. The action area spans two mountain ranges in west-central Montana: the Bitterroot Mountains to the west and the Sapphire Mountains to the east of the Bitterroot River valley, bisected by highway 93. Elevations range from 3,200 feet at the north end of the Bitterroot Valley to the 10,157 foot summit of Trapper Peak on the south.

A portion of the action area (21%) falls within the Bitterroot Ecosystem Recovery Zone. The remained is outside of any areas designated for management of grizzly bears by any Recovery Plan or conservation strategies. The BA describes approximately 34% of the action area falls within designated Wilderness, Wilderness Study Areas, and Inventoried Roadless Areas. The Forest also manages 1,179 acres of scattered Forest ownership parcels in the valley bottom that are not part of the action area because they are spatially disconnected from the contiguous Forest land ownership, completely surrounded by private lands, and do not contain enough habitat to support grizzly bear persistence (only 1 parcel contains more than 80 acres).

The Forest divided the action area into 11 Grizzly Bear Analysis Units (GBAUs) for the purpose of analyzing effects to individual grizzly bears at a spatial scale that is biologically relevant to the bear (BA Table 2 and Appendix A, Map 6; U.S. Forest Service 2020). These analysis areas encompass an area approximately the size of an annual home range of an adult female grizzly bear. The areas do not represent actual home ranges, nor do they represent management units for grizzly bears. They simply provide a method for analyzing effects to grizzly bears consistently

across the action area. Grizzly bears have not necessarily been verified in each of these analysis areas nor is it implied that occupancy is expected or required. The GBAUs include the suite of seasonal habitats that could support grizzly bear reproduction, although the western GBAUs are restricted in elevation due to the Bitterroot Ecosystem Recovery Zone boundary lying directly adjacent to the west, encompassing the higher elevations. All GBAUs include some higher elevation, steeper terrain that could provide denning habitat, as well as xeric forests and grasslands at lower elevations, and more mesic, productive forest types and wet meadows that are more likely to provide spring and fall food resources. Because the Service has not defined Bear Management Units within the Recovery Zone, the BA analyzed effects of the Forest Plan, Travel Management Plan, and Amendment within the entire portion of the Recovery Zone in Montana that is managed by the Bitterroot National Forest (U.S. Forest Service 2020, Appendix A, Map 6).

## **B. Status of the Species within the Action Area**

This section focuses on the status of grizzly bears occurring within the action area. Recent information indicates only a few verified grizzly bear on or near the Bitterroot National Forest (U.S. Forest Service 2020, p. 13). The verified occurrences have occurred infrequently and not across all portions of the action area. However, we expect that additional grizzly bears may inhabit more portions of the action area over the life of the Forest Plan as grizzly bear populations in both the Yellowstone Grizzly Bear Ecosystem and the Northern Continental Divide Ecosystem continue to expand their range.

The number of grizzly bears using the action area is very low and numbers will increase relatively slowly over time. This is especially true for female grizzly bears. As described in Proctor et al. (2012), males move more frequently and over longer distances than females. Males have large home ranges and establish home ranges nearly three times further away from their mother's home ranges than do female offspring. Females usually establish smaller home ranges than males that overlap with their mother's home range (Waser and Jones 1983; Schwartz et al. 2003). In doing so, they generally disperse over much shorter distances than male grizzly bears (McLellan and Hovey 2001; Proctor et al. 2004). Therefore, female dispersal is a multi-generational process where females must live year-round in an area, successfully reproduce, and offspring disperse into adjacent, unoccupied habitat. Thus, female grizzly bear presence in the action area is likely to increase slowly over time.

## **C. Factors Affecting Species Environment within the Action Area**

This section identifies and describes key areas of Forest management that affect the grizzly bears' environment. These factors include access management, attractant management and developed sites, livestock management, vegetation management, fire management, and oil and gas leasing. General impacts of these factors will be discussed in more detail in the '*Effects of the Action*' section below.

## 1. Access Management

### *Wheeled Motorized Access*

Motorized access protects secure habitat, which is important to the survival and reproductive success of grizzly bears, especially adult female grizzly bears (Mattson et al. 1987, pp.18-19; IGBC 1994, p. 1). Grizzly bear habitat security is primarily achieved by managing motorized access which: (1) minimizes human interaction and reduces potential grizzly bear mortality risk; (2) minimizes displacement from important habitats; (3) minimizes habituation to humans; and (4) provides habitat where energetic requirements can be met with limited disturbance from humans (Mattson et al. 1987; McLellan and Shackleton 1988; McLellan 1989; Mace and Manley 1993; Mace et al. 1996; Wakkinen and Kasworm 1997).

Recent research conducted on grizzly bears in Alberta, British Columbia assessed the impact of linear road density on grizzly bears. Boulanger and Stenhouse (2014) found strong spatial gradients in grizzly bear population trends based upon road linear density. Further, the authors identified threshold values for linear road densities associated with desired grizzly bear population outcomes. In their study, most bears occurred in areas with road densities of 2.4 mi/mi<sup>2</sup> (1.5 km/km<sup>2</sup>) or less. Adult females occupied habitat with road densities of 2.0 mi/mi<sup>2</sup> (1.25 km/km<sup>2</sup>) or less. They recommended that in the core conservation area in Alberta where this research was conducted, road densities below 1.2 mi/mi<sup>2</sup> (0.75 km/km<sup>2</sup>) should allow for survival rates of females with dependent offspring high enough to ensure an increasing population (ibid. at p. 18).

**Table 1. Linear miles and density of open and total motorized routes within Grizzly Bear Analysis Units (GBAUs) on the Bitterroot National Forest.**

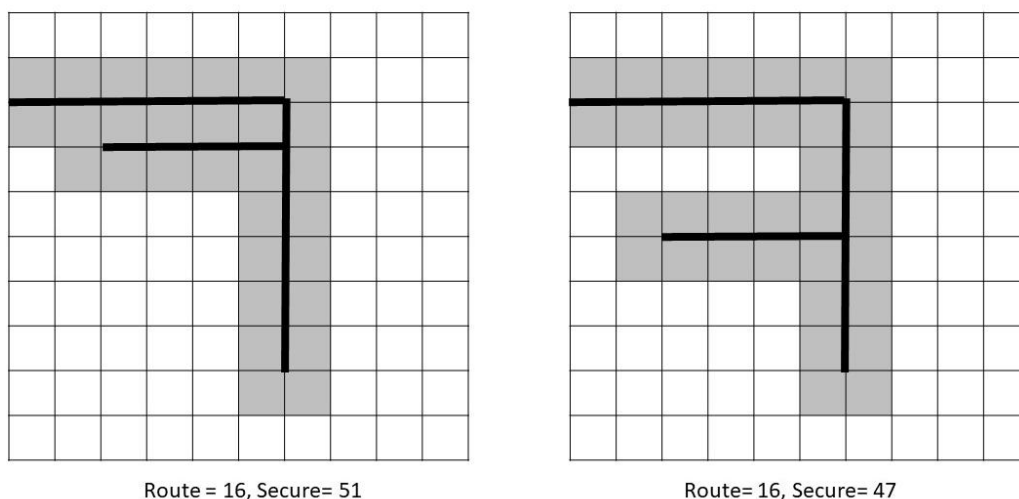
Area/GBAU Name	Square Miles	Linear Route Miles of Total Motorized Routes	Linear Route Density of Total Routes (miles/mile <sup>2</sup> )	Linear Route Miles Open to Public Use Only	Linear Route Density of Open Routes (miles/mile <sup>2</sup> )
<b>Total Action Area</b>	<b>1,484.9</b>	<b>3,256.0</b>	<b>2.2</b>	<b>2,567.3</b>	<b>1.7</b>
Burnt Fork Bitterroot River GBAU	156.5	329.4	2.1	260.9	1.7
Lost Horse Creek GBAU	137.7	182.0	1.3	164.9	1.2
Lower Bitterroot River GBAU	75.2	149.2	2.0	105.5	1.4
Lower East Fork Bitterroot River GBAU	138.5	385.2	2.8	306.6	2.2
Lower West Fork Bitterroot River GBAU	158.5	438.2	2.8	360.3	2.3
Skalkaho Creek GBAU	101.8	192.5	1.9	163.8	1.6
Sleeping Child Creek GBAU	151.0	569.7	3.8	383.7	2.5
Upper East Fork Bitterroot River GBAU	164.2	275.3	1.7	210.1	1.3
Upper West Fork Bitterroot River East GBAU	165.5	299.3	1.8	237.4	1.4
Upper West Fork Bitterroot River West GBAU	145.1	216.5	1.5	180.8	1.2
Warm Springs GBAU	90.9	218.7	2.4	191.7	2.1

The Forest provided information regarding linear route density within each GBAU and in the Recovery Zone (**Error! Reference source not found.**). Linear route density for open motorized routes averages 1.7 mi/mi<sup>2</sup> across the entire action area, and ranges from 1.2-2.5 mi/mi<sup>2</sup> for any given GBAU. Total linear route density is slightly higher, at 2.2 on average across the entire action area, ranging from 1.3 to 3.5 mi/mi<sup>2</sup> for the individual GBAUs. Within the Recovery Zone portion of the action area, however, linear route densities are well below 1.0 mi/mi<sup>2</sup>.

Linear route density information is not directly comparable to the “moving windows” analysis that has been used in some research (e.g. Mace et al. 1996, Wakkinen and Kasworm 1997) and was used to set standards for access management on portions of some National Forests that grizzly bear Recovery Zones. Rather, linear route density is a simple calculation of the linear distance of roads in an analysis area, divided by the total size of the analysis area. While some research has examined linear route densities in relation to grizzly bear populations, linear road density values for grizzly bear selection that are reported in the literature (e.g. Mace and Manley 1993, Boulanger and Stenhouse 2014) are only applicable when they are compared to road densities calculated at a similar scale. Furthermore, while linear route density indicates the total amount of roads in the action area, it does not present a spatial depiction of where routes occur. For example, portions of the analysis area may have high route densities, even within the analysis areas with lower overall linear route densities. Likewise, some portions of analysis areas may have low route densities or even no motorized routes, even within the analysis areas with higher linear route densities).

Although road density provides a useful threshold to describe human-caused effects to grizzly bears based on existing literature, road density alone fails to consider traffic volume, lethality (i.e., the tendency for people to kill bears), proximity to forage resources and how road placement affects habitat patch size (Proctor et al. 2020, pp. 25-26). For instance, even in a bear management unit with overall low road density, there may be patches of high road density interspersed with patches of low road density or even unroaded areas. In these areas, measures of secure habitat may present a more accurate depiction of the spatial mix of motorized routes and secure habitat (Figure 1).

**Figure 1. Simplistic example of a 5% decrease in secure habitat while miles of linear routes, and thus linear route density, stay the same. Clear squares represent secure habitat, shaded squares represent non-secure habitat around roads or motorized routes (dark black lines).**



In the Yellowstone ecosystem, road densities and the amount of secure habitat within female home ranges had a large influence on their survival (Schwartz et al. 2010). Both road density and the proportion of secure habitat contributed different yet important components influencing survival: road density had more influence on survival as the proportion of secure habitat within female home ranges decreased.

Therefore, the Service also requested that the Forest provide information regarding the amounts of secure habitat within each GBAU. Secure habitat provides an indication of the spatial mix of motorized routes, in relation to areas outside the influence of motorized routes (for example, see Figure 7 in Proctor et al. 2020, p. 26.). Studies have shown that female grizzly bears selected for, and survived better in, areas with greater secure habitat (review in Proctor et al. 2020, p. 25-26; Mace et al. 1996, p. 1,400; Wakkinen and Kasworm 1997, p. 20; Gibeau et al. 2002, p. 126; Schwartz et al. 2010, pp. 659-660).

Secure habitat is generally defined as the area outside the zone of influence of high levels of human disturbance. Most studies (reviewed in Proctor et al. 2020) have used 500 meters as the zone of influence around roads and motorized trails. Some studies have then further defined secure habitat by using a minimum patch size (e.g. Schwartz et al. 2010 used 10 acres; Mace et al. 1996 showed greater use in patches of secure habitat >2,500 acres). As described in Appendix F of the BA (U.S. Forest Service 2020), no current research on grizzly bear habitat use exists for the Bitterroot Ecosystem to inform a minimum size patch of secure habitat that grizzly bears might use. Although larger, less fragmented patches of secure habitat are likely the ideal for a grizzly bear, even a small patch of secure habitat may afford a grizzly bear a valuable space to avoid the effects of motorized routes and to move through or find valuable habitat in the area, and thus may be important for connectivity. Therefore, the Forest chose to use a minimum patch size of just 1 acre when identifying existing secure habitat.

Likewise, due to limitations with the current motorized access data in portions of the action area and in order to be conservative when analyzing effects, the Forest buffered all known existing

routes (excluding decommissioned routes) to identify secure habitat. As described in the BA (U.S. Forest Service 2020, p. 16 and Appendix F), the estimates of secure habitat (Table 2) may underestimate actual secure habitat that exists on the ground because some routes that may be physically impassable to motor vehicle use were buffered and excluded from secure habitat, as were non-NFS lands. The Forest will make corrections to this existing condition baseline in future project consultations if other routes are discovered that are currently not captured in the Forest GIS database. Newly discovered roads may or may not affect the existing amount of secure habitat depending on their location.

**Table 2. Secure habitat by GBAU and within the Bitterroot Ecosystem on the Bitterroot National Forest lands in Montana.**

Area	Total Acres	Secure Habitat	% Secure Habitat by Area
<b>Total Action Area</b>	<b>1,195,992</b>	<b>627,205</b>	<b>52%</b>
Bitterroot Ecosystem within Montana	245,677	244,737	100%
<b>Total for all GBAUs</b>	<b>950,315</b>	<b>382,468</b>	<b>32%</b>
Burnt Fork Bitterroot River GBAU	100,140	32,580	33%
Lost Horse Creek GBAU	88,114	50,150	57%
Lower Bitterroot River GBAU	48,107	20,135	42%
Lower East Fork Bitterroot River GBAU	88,665	12,662	14%
Lower West Fork Bitterroot River GBAU	101,437	35,032	35%
Skalkaho Creek GBAU	65,126	29,548	45%
Sleeping Child Creek GBAU	96,619	13,568	14%
Upper East Fork Bitterroot River GBAU	105,094	62,356	59%
Upper West Fork Bitterroot River East GBAU	105,946	46,621	44%
Upper West Fork Bitterroot River West GBAU	92,892	57,980	62%
Warm Springs GBAU	58,175	21,836	38%

Almost the entire portion of the Bitterroot Ecosystem (Recovery Zone) that is within the portion of the Bitterroot National Forest in Montana offers secure habitat for grizzly bears. This amount of secure habitat far exceeds amounts found in most Bear Management Units or subunits in other Recovery Zones, and thus offers exceptional secure habitat for grizzly bears within the Recovery Zone.

Outside of the Recovery Zone, amounts of secure habitat vary by GBAU. Some of the GBAUs with highest road densities, not surprisingly, also have the lowest amounts of secure habitat (e.g. Lower East Fork Bitterroot River and Sleeping Child Creek GBAUs). However, the Lower West Fork Bitterroot River GBAU has nearly 20% more secure habitat than the Lower East Fork, despite having nearly the same linear road densities. Thus showing that road densities are only one metric to use for assessing suitability, but road densities do not perfectly align with secure habitat for grizzly bears.

The GBAUs with highest amounts of secure habitat include Upper West Fork Bitterroot River West, Upper East Fork Bitterroot, and Lost Horse Creek. These are the GBAUs with the lowest linear road densities, as well. The secure habitat amounts in these GBAUs are similar to amounts shown in northwest Montana to support female grizzly bear home ranges. For example,

Mace et al. (1996) found female grizzly bears in the NCDE selected for and survived in home ranges with 56% secure habitat as compared to 30% secure habitat outside the composite female home range. In the greater area of the Yaak and Selkirks Mountains, Wakkinen and Kasworm (1997) found female grizzly bears selected and survived in home ranges with 55% secure habitat relative to 23% -34% secure habitats outside home ranges.

### ***Over-Snow Access Management***

Grizzly bears that are entering dens or emerging from dens during the time that motorized over-the-snow activities are occurring could be affected by that motorized use. To determine areas where over-the-snow activities could overlap with grizzly bear habitat use, it is important to know when bears den, then where motorized over-the-snow access can occur.

The Forest estimated and modeled potential denning habitat (U.S. Forest Service 2020, p. 23), and estimated that there are approximately 84,261 acres (7% of the total action area) of modeled denning habitat on NFS lands within the action area. Approximately 62% of this modeled denning habitat is within the Bitterroot Ecosystem (Recovery Zone), although GBAUs do have scattered denning habitat across each area, with the exception of the Lower East Fork Bitterroot River and the Sleeping Child Creek GBAUs (Appendix A, Map 12). There have been no grizzly bear dens identified in the action area.

Of all modeled denning habitat, 85% (71,550 acres/84,261 acres) is contained in areas restricted to over-snow vehicles year round. The remaining modeled denning habitat that lies outside of areas restricted to over-snow vehicles is mostly concentrated in the Allan Mountain and Sleeping Child Inventoried Roadless areas within the Upper West Fork East, Warm Springs, and Skalkaho GBAUs. While over-snow vehicle travel is allowed in these areas, other motorized access is limited, thus affording these potential denning areas some level of protection from spring disturbance in years of low snowpack.

Even if denning habitat were to occur outside of the modeled areas, the Travel Management Plan ensures abundant large quiet areas that are free from disturbance by over-snow vehicles. Within the Action Area, 623,543 acres (52% of the action area) have over-snow vehicle restrictions (U.S. Forest Service 2020, p. 18). Ninety-three percent (93%) is restricted year round, while 7% is restricted from October 15-December 1<sup>st</sup>. Seventy-five percent (75%) of all secure habitat in the action area exists in areas that have year-round over-snow vehicle restrictions (Appendix A, Map 8). There are some large, higher elevation areas that contain potential denning habitat across the Forest (in wilderness areas, WSAs, and IRAs) where the use of motorized over-snow vehicles is prohibited. The Forest Plan does not limit over-snow vehicle use specifically in the late spring period, but the Travel Management Plan increased large quiet areas that are free from disturbance by over-snow vehicles.

### ***Unauthorized Motorized Use***

A private entity's non-compliance with the Forest's access management is an illegal activity. While illegal use of the Forest via motorized access in areas unauthorized for such use may occur within the action area, such illegal use is not a Forest action. The term "action" for section 7 consultation is defined in the Consultation Handbook (U.S. Fish and Wildlife Service, National Marine Fisheries Service 1998) as: all activities or programs of any kind *authorized, funded,*

*and/or carried out*, in whole or in part, by Federal agencies in the United States or upon the high seas (emphasis added). These and any other illegal activities are not the result of a federal action and therefore not analyzed under effects of the action, but their influence is considered for describing the environmental baseline.

Illegal motorized access could theoretically occur anywhere on the Forest. While illegal motorized access has the potential to affect individual grizzly bears, the amount, location, duration, and timing of effects resulting from such illegal use is not known. The probability of long-term illegal motorized access and probability of illegal access coinciding with the presence of grizzly bears is anticipated to be low but is unknown. As such, the potential consequences to grizzly bears are uncertain. Illegal motorized access is expected to be spatially disparate and temporary and is not likely to collectively cause an adverse effect because most Forest users follow travel regulations and when illegal use is observed, or when user-created roads become apparent, the Forest corrects the situation as soon as they are able. Because all routes are considered the same (whether open or restricted) for calculating secure habitat for grizzly bears (as described above), illegal motorized use of restricted routes does not affect secure habitat. Secure habitat could only be affected by off-road use or use of reclaimed/obliterated or bermed roads. However, effects of illegal motorized access would not result in a change in the Forest's baseline access conditions as such use was not authorized, carried out, or funded by the Forest. Also, illegal motorized access would most likely result in temporary effects to grizzly bears as opposed to a permanent change in motorized access conditions because the Forest corrects the situation as soon as they are able, to impacts to multiple resources.

### ***Non-motorized Access and Recreation***

Recreation on BNF lands takes many forms, including those that involve motorized use of roads and trails, as discussed above, as well as camping, also discussed above, and finally non-motorized uses such as hiking, biking, hunting, berry picking, cross-country skiing, and other activities. Opportunities range from remote backpack and horse camping to developed campgrounds with tables, toilets, and other amenities; from a feeling of remoteness and solitude to one associated with the presence of other users.

Non-motorized recreational use can occur along restricted roads, trails, and along reclaimed roads or trails, as well as off-road or off-trail. Multiple studies have documented displacement of individual grizzly bears from non-motorized trails to varying degrees (Schallenberger and Jonkel 1980; Jope 1985; McLellan and Shackleton 1989; Kasworm and Manley 1990; Mace and Waller 1998; White et al. 1999). However, none of these studies documented increased mortality risk from foot or horse trails or population level impacts to grizzly bears. For example, while grizzlies in GNP are displaced to some degree by nonmotorized trails (Jope 1985; White et al. 1999), conflicts and grizzly bear mortalities there are extremely infrequent and related almost exclusively to campgrounds and other human-use areas.

Mountain biking does not result in direct mortality of grizzly bears, although encounters with mountain bikes may elicit greater flight response from grizzly bears than other non-motorized use due to the higher potential for sudden encounters (Quinn and Chernoff 2010, Mattson 2019, Herrero and Herrero 2000 *in* Servheen et al. 2017). Sudden surprise encounters can also result in human- grizzly bear conflicts, depending on whether the bear flees or charges. Non-motorized activities such as hunting introduce the potential for intentional (self-defense, poaching or malicious kills, or hunter defense-of-kill) or unintentional (mistaken identity)



shootings. Most grizzly bear deaths in the CYE and SE that occur on National Forest lands are hunting related or occur during the hunting season (Kasworm et al. 2020a; Kasworm et al. 2020b). Hunters on the Bitterroot National Forest have been accustomed to not having to worry about encounters with grizzly bears in the past, but the chances of an encounter are increasing as more grizzly bears make their way to the Forest.

## **2. Food and Attractant Storage and Site Development**

The Forest Plan does not contain direction regarding the management of bear attractants. On Forest lands, requirements for proper storage of food, garbage, or other attractants are established and enforced through issuance of a special order(s), rather than through the Forest Plan. At this time, the only food storage order in effect within the action area is for the Anaconda-Pintler wilderness area. To date, no known instances of food conditioning and/or conflicts with grizzly bears related to food and attractant storage have occurred in the action area. Instances of food conditioning and conflicts with black bears are known to have occurred in the Bitterroot valley. As such, the potential does exist for issues with grizzly bears related to food and attractants.

Within the action area, there are currently 27 developed sites that provide for overnight stays, for recreational or administrative use. Recreation use sites include 21 campgrounds and 6 lookouts and cabins that are available for the public to rent (Wood's Cabin, Gird Point Lookout, East Fork Guard Station, TwoGood Cabin, McCart Lookout, Medicine Point Lookout) (Appendix A, Map 10). Eleven campgrounds and 1 cabin have garbage service and are outfitted with bear-resistant trash containers. All of the other campgrounds and cabin/lookout rental sites are required pack it in/pack it out, with no garbage service provided.

In addition, there are scattered administrative sites that include residences, bunkhouses, and staffed lookouts during the fire season. The residences and bunkhouses are located on Ranger District compounds and have garbage service.

## **3. Livestock Grazing**

Grizzly bears frequently coexist with large livestock such as adult cattle without preying on them, but are more likely to attack and kill smaller animals such as domestic sheep, domestic goats, calves, or chickens (Knight and Judd 1983, Anderson et al. 2002); however, recent management reports from MFWP have documented large livestock depredations (cattle), grizzly bear-human conflicts due to boneyards from ranching operations, and management removals due to these depredations (MTFWP 2019). If repeated depredations occur, managers may respond by relocating bears or removing them from the population. Thus, areas with small domestic livestock, and potentially areas with larger livestock, have the potential to become population sinks (Knight et al. 1988). Because of the increased risk to grizzly bears posed by domestic sheep and other small livestock, the Interagency Grizzly Bear Guidelines (Interagency Grizzly Bear Committee 1986) emphasized the desirability of phasing out these types of allotments.

There are no domestic sheep allotments on the Forest. There are a total of 18 cattle grazing allotments currently on the Forest, of which 11 are currently active (U.S. Forest Service 2020, p. 17-18, also Appendix A, Map 9). These allotments cover 193,706 acres, or approximately 16% of the action area.

#### **4. Vegetation Management**

Grizzly bears use numerous different habitats for foraging. Use tends to be more frequent in areas that offer some type of hiding cover nearby, particularly during daylight hours (Aune and Kasworm 1989, Mace and Waller 1997). Vegetation management may alter the amount and arrangement of cover and forage available to bears. Timber harvest and fire can locally increase bear foods by stimulating the growth of grasses, forbs, and berry-producing shrubs. Associated roads and human activity can negatively affect grizzly bears by disturbing or displacing bears during logging activities and by increasing mortality risk (Zager et al. 1983).

Suitable timber is defined as those acres that are classified as available for timber production and are specifically managed for growth yield. The Bitterroot Forest Plan identified 389,820 acres as suitable for timber production in Montana (33% of the action area). The planned annual allowable sale quantity was projected to be 33.37 million board feet, to be harvested each year from approximately 3,647 acres in management areas 1, 2, 3a, 3b and 3c (U.S. Forest Service 2020, Appendix B). Forest plan monitoring data show that actual timber harvest levels have been well below the projections made in 1987 (U.S. Forest Service 2020, p. 19). The emphasis of the timber harvest program has been the treatment of hazardous fuels, particularly in the wildland-urban interface, and salvage of bark beetle-killed trees.

#### **5. Fire Management**

Wildfire has a strong influence on the age distribution and spatial arrangement of forest vegetation. Although there is substantial variation year-to-year, from 1996 to 2016 a total of 496,354 acres of the Forest were burned by wildfires, or an average of about 23,635 acres/year. Wildfire control efforts and use of prescribed burning occur within the action area. The acres available and locations where such methods are used vary across the action area. The combination of wildfires and active vegetation management (timber harvest, fuels treatment, and prescribed fire) is expected to continue to recruit early forest successional stages that produce a variety of bear foods while maintaining a mosaic of food and cover.

#### **6. Energy and Mineral Development**

Energy (specifically oil and gas) and mineral development may increase grizzly bear mortality risk from associated motorized use, habituation to human presence, and/or increased human-grizzly bear encounters and conflicts. Energy and mineral development activities may also result in permanent habitat loss, habitat fragmentation, and displacement of bears.

Currently there is no gas or oil development occurring on the Forest (U.S. Forest Service 2020, p. 20). There are numerous mining claims on the Forest. Although there are many active mining claims on the Forest, at this time there are no active mining operations (ibid.). Minor activities such as surveying and collecting samples on a claim on NFS lands are allowed at any time, but no activities such as construction of roads, building cabins, or caching of food or equipment are authorized. Before an active operation could begin, the claimant would have to file a notice of intent and a plan of operations with the Forest Service. A plan of operations would trigger the NEPA process and ESA Section 7 consultation. At this time there are no notices of intent or plans of operation on the Forest.

The Forest receives numerous requests for riprap material, sand, gravel, and decorative/landscaping stone. Common use and community pit designations are an effective way of meeting this need while ensuring that management plans are developed, and reclamation funds are available. Four pit/collecting areas on the Forest are open to the public: Ambrose, Upper Burnt Fork, Railroad, and Alta Shale. Gravel pits used by the Forest for administrative use include the Lost Horse, Nez Perce Roadside, Nez Perce Borrow (Pete Creek), Jim Hell, Rombo, and Springer Gulch Pits. Five miscellaneous roadside borrow areas, and the Piquett Creek Road roadside borrow area are also used to provide rock for administrative use.

## **7. Climate Change**

In the 5-year status review, the Service examined climate change and potential effects on grizzly bears (U.S. Fish and Wildlife Service 2011). The most likely ways in which climate change may potentially affect grizzly bears are a reduction in snowpack levels, shifts in the denning season, shifts in the abundance and distribution of some natural food sources, and changes in fire regimes due to summer drought. The potential positive and negative effects would likely be variable and are difficult to predict. Grizzly bears are habitat generalists and opportunistic omnivores, which may make them less susceptible to changes in plant communities than some other wildlife species.

## **V. EFFECTS OF THE ACTION**

Regulations implementing the Act define “effects of the action” as “all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (50 CFR 402.02).

The following sections analyze the consequences of the implementation of the elements of the Forest Plan on grizzly bears. The effects will be discussed by broad categories of risk factors as identified in the *Environmental Baseline* section (above). For each category of effect, we begin with a general summary of what the science currently tells us about the potential impacts on grizzly bears and grizzly bear habitat. This is followed by an analysis of the specific effects of the proposed action on grizzly bears and grizzly bear habitat in the action area.

### **A. Access Management**

#### **1. Wheeled Motorized Access**

##### ***General Effects***

This section provides a general discussion of direct and indirect effects of motorized access management on grizzly bears as affected by road densities. Research has confirmed adverse impacts of roads on grizzly bears (Mace et al. 1996, Mace et al. 1999, Proctor et al. 2018). Negative impacts associated with roads and excessive road densities influence grizzly bear

population and habitat use patterns. The Grizzly Bear Compendium (IGBC 1987) summarized impacts reported in the literature including:

- Avoidance/displacement of grizzly bears away from roads and road activity;
- Habitat loss, modification, and fragmentation due to roads and road construction, including vegetative and topographic disturbances;
- Changes in grizzly bear behavior, especially habituation to humans, due to ongoing contact with roads and human activities conducted along roads; and
- Direct mortality from road kills, legal and illegal harvest, and other factors resulting from increased human-bear encounters.

The Interagency Grizzly Bear Committee (IGBC) Taskforce provided standardized definitions for roads and standardized methods to measure road densities and define analysis areas within the recovery zones as a result of grizzly bear research information on open and total road densities and grizzly bear core areas (IGBC 1998). The Service considers the management of roads in the recovery zones one of the most important factors in grizzly bear habitat conservation and the IGBC Taskforce guidelines as the best direction with which to manage roads within the recovery zones.

*Displacement and security.* Some grizzly bears, particularly subadults, readily habituate to humans and consequently suffer increased mortality risk. However, many grizzly bears under-use or avoid otherwise preferred habitats that are frequented by people. Not all avoidance results in significant impacts to grizzly bears. However, if road densities reach a level that such under-use of preferred habitat represents modification of normal grizzly bear behavior, grizzly bears may experience significant impacts. Negative association with roads arises from the grizzly bears' response to vehicles, vehicle noise and other human-related noise around roads, human scent along roads, and hunting and shooting along or from roads. Grizzly bears that experience such negative consequences learn to avoid the disturbance and annoyance generated by roads. Some may not change this resultant avoidance behavior for long periods after road closures. Even occasional human-related vehicle noise can result in annoying grizzly bears to the extent that they continue to avoid roaded habitat.

All factors contributing to direct links between roads and displacement from habitat have not been quantified. The level of road-use by people is likely an important factor in assessing the potential displacement caused by any road. Contemporary research, however, indicates that grizzly bears consistently were displaced from roads and habitat surrounding roads, often despite relatively low levels of human use (Mattson et al. 1987, McLellan and Shackleton 1988, Aune and Kasworm 1989, Kasworm and Manley 1990, Mace and Manley 1993, Mace et al. 1996).

Avoidance behavior is often strongest in adult grizzly bears, with males selecting for high quality habitats and absence of humans (Gibeau et al. 2002). Males that were found using high quality habitat near roads, did so during the night where hiding cover was available (ibid). However, adult females were more likely to avoid humans all together, rather than seek out the highest quality habitats. Mueller et al. (2004) reported all age and sex classes used habitats closer to high-use roads and development during the human inactive period. All bears showed a

considerably greater avoidance of high-use roads and development during periods of high human activity. They did show however, that regardless of the time of day, subadult bears were found closer to high-use roads than adult bears. Gibeau et al. (2002) also demonstrated that subadults were almost always closer to human activity than adults. Boulanger and Stenhouse (2014) found that subadult grizzly bears were most vulnerable to road-based mortality.

In Montana, Aune and Stivers (1982) reported that grizzly bears avoided roads and adjacent corridors even when the area contained preferred habitat for breeding, feeding, shelter and reproduction. McLellan and Shackleton (1988) found that grizzly bears used areas near roads less than expected in southeastern British Columbia and estimated that 8.7 percent of the total area was rendered incompatible for grizzly bear use because of roads. In Montana, Mace and Manley (1993) reported use of habitat by all sex and age classes of grizzly bears was less than expected in habitats where total road densities exceeded 2 miles per square mile. Twenty-two percent of the South Fork Study area exceeded 2 miles per square mile. Adult grizzly bears used habitats less than expected when open motorized access density exceeded 1 mile per square mile. Further, female grizzly bears in the South Fork Study area tended to use habitat more than 0.5 mile from roads or trails greater than expected. As traffic levels on roads increased, grizzly bear use of adjacent habitat decreased (Mace et al. 1996). In Yellowstone, Mattson et al. (1992) reported wary grizzly bears avoided areas within 2 kilometers (1.2 miles) of major roads and 4 kilometers (2.4 miles) of major developments or town sites.

Mace et al. (1996) and other researchers have used 500 meters as the zone of influence around roads. Waller and Servheen (2005) also demonstrated avoidance of areas within 500 meters of US-2. Benn and Herrero (2002) set zones of influence of 500 meters and 200 meters around roads and trails, respectively. They reported that all 95 human-caused grizzly bear mortalities with known locations that occurred in Banff and Yoho National Parks between 1971 and 1998 occurred within these zones of influence along roads and trails or around human settlements. Gibeau and Stevens (2005) documented bears further from roads when distant from high quality habitat, indicating avoidance behavior.

Research suggests that grizzly bears benefit from road closures aimed at minimizing traffic on roads within important seasonal habitat, especially in low elevation habitats during the spring (Mace et al. 1999). When roads are located in important habitats such as riparian zones, snowchutes and shrub fields, habitat loss through avoidance behavior can be significant. Mace et al. (1996) found that most of the roads within grizzly bear seasonal ranges were either closed to vehicles or used infrequently by humans. Some grizzly bears avoided areas with a high total road density even when the roads were closed to public travel. If human-related disturbances such as high levels of road use continue in preferred habitats for extended periods of time, grizzly bear use of the area may be significantly limited, particularly use by female grizzly bears. In the Swan Mountain study (Mace et al. 1996), female grizzly bear home range selection of unroaded cover types was greatest and as road densities increased, selection declined. Zager (1980) reported the underuse of areas near roads by females with cubs. Aune and Kasworm (1989) and McLellan (1989) found that female cubs generally established their home range within or overlapping with their mother's home range, whereas males generally dispersed from their mother's home range. Long-term displacement of a female from a portion of her home range may result in long-term under-use of that area by female grizzly bears because cubs have limited potential to learn to use the area. In this way, learned avoidance behavior could persist for more than one generation of grizzly bears before grizzly bears again utilize habitat associated

with closed roads. Thus, displacement from preferred habitats may significantly modify normal grizzly bear behavioral patterns.

Conversely, grizzly bears can become conditioned to human activity and show a high level of tolerance especially if the location and nature of human use are predictable and do not result in overtly negative impacts for grizzly bears (Mattson 1993). In Glacier National Park, Jope (1985) suggested grizzly bears in parks habituate to high human use and showed less displacement, even in open habitats. Yonge (2001) found that grizzly bears near Cooke City, Montana, were willing to consistently forage in very close proximity to high levels of human use if cover was sufficient and energetically efficient feeding opportunities were present. Both Mattson (1993) and Yonge (2001) postulated that areas with higher levels of human activity might have a positive effect for bears by serving as a kind of refugia for weaker population cohorts (subadults and females with cubs) seeking to avoid intra-specific competition (adult males). However, Mattson qualified this observation by adding that the beneficial effects vary as to whether hunting is allowed, and how closely the human population is regulated. Further, food conditioned grizzly bears were much more likely to be killed by humans.

Both Yonge (2001) and Mattson (1993) indicated that increases in human use levels can be deleterious if some human activities are unregulated, such as use of firearms, presence of attractants, nature and duration of human uses. Conversely, a level of coexistence between humans and grizzly bears can be achieved if such activities are controlled. Near Cooke City, Montana, the New World Mine reclamation project had minimal effects on grizzly bears, in part because reclamation activities were temporally and spatially predictable and people associated with the work were carefully regulated against carrying firearms or having attractants available to grizzly bears (Tyers, unpublished 2006). In the Swan Valley of Montana, raw location data from a small number of collared grizzly bears show nocturnal use of highly roaded habitat (C. Servheen, USFWS, pers. comm. 2005). The Swan Valley data have not been statistically analyzed and the study was not designed to determine the impact of roads on bears, sample size is very small, and perhaps most importantly, mortality rates for these grizzly bears are not yet known. However, these data indicate that some grizzly bears can apparently habituate to relatively high levels of human activity.

Specific causes or factors involved in the selection or preferences for certain home ranges by grizzly bears are not well understood. Mace and Manley (1993) found that grizzly bear home ranges in the South Fork Study area included remote areas in high elevations. South Fork Study grizzly bear habitat-use data, road density analyses of the South Fork Study area, previous studies and CEM analysis (U.S. Forest Service 1994, Mace et al. 1999) suggested that low-elevation habitats were not freely available to grizzly bears because of high road densities and associated human use in these areas. High road densities in low-elevation habitats may result in avoidance of or displacement from important spring seasonal habitat for some grizzly bears or high mortality risk for those individuals that venture into and attempt to exploit resources contained in these low-elevation areas.

Male grizzly bears typically have larger home ranges than females, and males, subadults, and transient grizzly bears are more mobile and do not have the same energetic needs as adult females. Transient individuals are highly mobile and not restricted to finding food and shelter within a home range. Thus, while displacement from habitat along roads may affect behavioral patterns such as feeding or sheltering of all grizzly bears, we do not anticipate such effects would

cause harm or significant impairment to these behavioral patterns of transient, subadult, or male grizzly bears. Where road densities are high enough to result in significant displacement, significant impairment to behavioral patterns of adult female grizzly bears may occur.

*Secure habitat.* Secure habitat describes where grizzly bears can meet their life history needs without the heightened mortality risk or negative consequences of disturbance-related behavioral modifications (i.e., habitat avoidance or nighttime use patterns) or repeated flight response. Secure habitat has been identified as one of the key issues related to effects of motorized access on grizzly bears and is important to the survival and reproductive success of grizzly bears. This metric more adequately represents the potential effects related to motorized access as it provides a more accurate indication of the spatial mix of motorized routes and areas outside the influence of motorized routes (for example, see Figure 7 in Proctor et al. 2020, p. 26.). Studies have shown that female grizzly bears selected for, and survived better in, areas with greater secure habitat (review in Proctor et al. 2020, p. 25-26; Mace et al. 1996, p. 1,400; Wakkinen and Kasworm 1997, p. 20; Gibeau et al. 2002, p. 126; Schwartz et al. 2010, pp. 659-660).

In a comprehensive review of research into the relationships between motorized access and grizzly bears, Proctor et al. (2020) cited research findings indicating that secure habitat may be as or more important than road density in predicting impacts to bears. They also noted that the spatial arrangement of motorized routes and security areas may be critically important in terms of the degree to which bears may be affected by motorized access, stating, "...evenly spaced roads, even at an otherwise acceptable road density, can provide very little security in patches within the range of average daily movements" (Proctor et al. 2018). In other words, the key to limiting impacts of roads on bears is tied to availability, location, and distribution of secure habitat that is a function of not simply numeric density of motorized routes, but the spatial arrangement in which they occur.

Studies in northwest Montana's Rocky Mountains found female grizzly bears selected for and survived in home ranges with 56% secure habitat as compared to 30% secure habitat outside the composite female home range (Mace et al. 1996). Consistently, to the west, female grizzly bears selected and survived in home ranges with 55% secure habitat relative to 23% -34% secure habitats in the greater area of the Yaak and Selkirks Mountains (Wakkinen and Kasworm 1997). Across the border in Canada, researchers found female grizzly bears selected and survived in secure habitats with 74% secure habitat as compared to available habitats with 56% secure habitat (Proctor et al. 2017). In the U.S. Yellowstone ecosystem, road densities and the amount of secure habitat within female home ranges had a large influence on their survival (Schwartz et al. 2010). Both road density and the proportion of secure habitat contributed different yet important components influencing survival: road density had more influence on survival as the proportion of secure habitat within female home ranges decreased.

*Habituation to Human Attractants.* In converse to avoidance of habitat due to roads, sometimes grizzly bears can become conditioned to human activity and show a high level of tolerance, or habituation, to human activity. If the location and nature of human use are predictable and do not result in overtly negative impacts for grizzly bears (Mattson 1993), areas with higher levels of human activity might have a positive effect for bears by serving as a kind of refugia for weaker population cohorts (e.g., subadults and females with cubs) seeking to avoid intra-specific competition (adult males; Mattson 1993, Yonge 2001). In Glacier National Park, Jope (1985) suggested grizzly bears in parks habituate to high human use and showed less displacement, even

in open habitats. Yonge (2001) found that grizzly bears near Cooke City, Montana, were willing to consistently forage in very close proximity to high levels of human use if cover was sufficient and energetically efficient feeding opportunities were present.

Habituation may not be positive, however. Mattson (1993) qualified his observation by adding that the beneficial effects vary as to whether hunting is allowed, and how closely the human population is regulated. Further, food conditioned grizzly bears were much more likely to be killed by humans. This may be especially true for subadults. Mueller et al. (2004) showed that regardless of the time of day, subadult bears were found closer to high-use roads than adult bears. Gibeau et al. (2002) also demonstrated that subadults were almost always closer to human activity than adults. Boulanger and Stenhouse (2014) found that subadult grizzly bears were most vulnerable to road-based mortality. Due to the fact that subadult females tend to remain within a portion of their mother's home range and have smaller dispersal distances, subadult males are at greater mortality risk as a result of habituation than subadult females.

*Grizzly Bear Mortality.* While grizzly bears are killed by vehicle collision, the most direct form of road-related mortality, the specific relationship between roads and the mortality risk to grizzly bears is difficult to quantify. The level of human use of roads is one of several factors influencing the mortality risk associated with any road. Research supports the premise that forest roads facilitate human access into grizzly bear habitat, which directly or indirectly increases the risk of mortality to grizzly bears (Mace et al. 1987, Mattson et al. 1992, McLellan and Shackleton 1988, Dood et al. 1986).

The presence of roads alone does not necessarily result in direct mortality of grizzly bears, but the proximity of the roads to human population centers, resulting in high numbers of people using roads, and dispersed recreation in habitat around roads can pose considerable risks to grizzly bears. Social values and attitudes also contribute to the level of mortality risk to grizzly bears. Incidental or accidental human-caused grizzly bear mortality, combined with a few individuals intent on illegally shooting grizzly bears, can collectively result in serious, detrimental effects to grizzly bear populations. Access management can be instrumental to reducing mortality risk to grizzly bears by managing the present and anticipated future road use-levels resulting from the increasing human population in western Montana.

### ***Effects in the Action Area***

The Forest Plan, Travel Management Plan, and proposed Amendment would allow for future projects to create new permanent and temporary motorized routes and to remove existing motorized routes in the action area. No standards exist that would limit the miles of routes that could be built in the future other than land designations that prohibit route construction by law, policy or rule. No motorized route construction is allowed in Wilderness, Wilderness Study Areas (WSA), and Inventoried Roadless Areas (IRAs). Outside of these areas, the Forest calculated the amount of area in GBAUs where route construction is allowed.

The Forest may propose in future projects to create new motorized routes in areas that are currently not secure habitat for grizzly bears. In these cases, higher route densities may exacerbate effects to grizzly bears moving into or through the area including higher mortality and



displacement, although depending on the status of these roads (open to public motorized use or restricted) and time on the landscape (permanent versus temporary route) these effects would be less than new permanent routes into existing secure habitat. If new motorized routes are constructed in or near areas that currently offer secure habitat, a decrease in the amount or arrangement of secure habitat may occur. Alternatively, building a new route in the midst of a dense area of existing roads may have little to no effect on existing secure habitat.

While not specifically proposed under the Forest Plan, permanent and temporary route construction and use may occur on a project by project basis. Temporary roads built for resource extraction such as timber harvest or mining may be short-term in duration of use or may remain on the landscape for several years and receive a substantive amount of use. The Forest Plan, Travel Management Plan, and Amendment do not restrict the amount of time a temporary road can last. However, for the sake of analysis, the Forest considers a temporary road to be one that exists on the landscape for no more than 5 years (U.S. Forest Service 2020, p. 27).

The Travel Management Plan (section 1.3) administratively changed the travel status of certain routes across the action area. Some of the changes will require site-specific NEPA analysis and have not yet been completed. These changes are in the minority of Travel Management Plan actions. For instance, an upcoming project is proposing to decommission over 35 miles of routes. Once NEPA is complete, these routes will be obliterated or made impassable, and in certain instances, may slightly increase grizzly bear secure habitat. Other obliterated or routes made impassable will not affect the total acres of grizzly bear secure habitat because the remaining route density and associated buffers exclude secure habitat. Therefore, the potential for displacement and risk of mortality for any grizzly bears that may be attempting to move into or through the action area would remain largely the same, although a slight reduction may be realized in the future as remaining Travel Management Plan actions are implemented.

The proposed Forest Plan Amendment would replace certain standards as they relate to elk habitat management and road density. Because this amendment does not authorize or prohibit future route construction, and the effects of the existing route density are analyzed above related to grizzly bear secure habitat, the Amendment will have no additional effect to motorized access on grizzly bears.

The Forest estimates that the amount of *linear miles of motorized routes* in each GBAU would be expected to remain more or less static over time. However, both permanent and temporary route construction will likely occur in the foreseeable future, and depending on where these actions occur spatially on the landscape, this construction and resulting buffers as described above may reduce total acres of secure habitat available on the Forest.

There will be no change in secure habitat in the portion of the Bitterroot Ecosystem inside the action area, as this area is wilderness, no road construction is permitted, and the area was appropriately buffered in the analysis to capture effects of routes that may be constructed up to the boundary. Therefore, the Forest will continue to provide secure habitat for grizzly bears in 100% of the portion of the Bitterroot Ecosystem Recovery Zone that is within the action area (i.e. the portion of the Recovery Zone that is on the Bitterroot National Forest in Montana). This equates to 244,737 acres of secure habitat, enough to provide completely secure home ranges for multiple female grizzly bears.

To estimate how much secure habitat could be affected outside of the Recovery Zone, the Forest calculated that there are approximately 51,441 acres of secure habitat outside of Wilderness, WSAs, and IRAs that could be affected by future route construction (U.S. Forest Service 2020, Appendix G). This calculation does not incorporate feasibility of construction or Forest Plan management areas in the action area that may limit route construction; it only provides a rough metric for how much area is potentially available for future route construction. Thus, this an overestimate of what could feasibly occur, and thus a very conservative look at the “worst case scenario” in terms of effects to secure habitat for grizzly bears.

**Table 3. Baseline amounts of secure habitat per GBAU, and estimates of future effects to secure habitat within GBAUs on the Bitterroot National Forest under the Forest Plan.**

	Total Size of GBAU (acres)	Baseline Amount of Secure Habitat (acres)	Baseline Amount of GBAU Providing Secure Habitat	Secure Habitat Outside Restricted Areas <sup>1</sup> (acres)	% of Baseline Secure Habitat That Could Be Affected In Future	Min. Amount of Secure Habitat In Future <sup>2</sup> (% of GBAU)	% Change from Baseline (total amount secure in GBAU)
Burnt Fork Bitterroot River	100,140	32,580	33%	3,804	12%	29%	4%
Lost Horse Creek	88,114	50,150	57%	2,601	5%	54%	3%
Lower Bitterroot River	48,107	20,135	42%	1,678	8%	38%	3%
Lower East Fork Bitterroot River	88,665	12,662	14%	8,145	64%	5%	9%
Lower West Fork Bitterroot River	101,437	35,032	35%	6,150	18%	28%	6%
Skalkaho Creek	65,126	29,548	45%	5,310	18%	37%	8%
Sleeping Child Creek	96,619	13,568	14%	5,061	37%	9%	5%
Upper East Fork Bitterroot River	105,094	62,356	59%	4,796	8%	55%	5%
Upper West Fork East Bitterroot River	105,946	46,621	44%	5,744	12%	39%	5%
Upper West Fork West Bitterroot River	92,892	57,980	62%	4,461	8%	58%	5%
Warm Springs	58,175	21,836	38%	3,690	17%	31%	6%
Total for all GBAUs	950,315	382,468	40%	51,440	13%	35%	5%

<sup>1</sup> Outside of Wilderness, Wilderness Study Areas, Inventoried Roadless Areas

<sup>2</sup> Assuming all acres of existing secure habitat outside of Restricted Areas are affected by motorized routes

The Forest estimated that new route construction (permanent or temporary) may realistically affect up to a maximum of 5% of secure habitat Action Area-wide, which roughly equates to 31,400 acres or 2.6% of the total Action Area acreage. There would be no effect to secure habitat in the portion of the action area that is within the Recovery Zone. It would occur in

GBAUs where route construction could occur outside of restricted areas (i.e. Wilderness, WSAs, and IRAs (Table 3). Outside of restricted areas, no GBAU contains more than 1% of total secure habitat across the entire action area that would be reduced if all secure habitat was eliminated.

The estimates in Table 3, derived from information provided in the BA (U.S. Forest Service 2020, Appendix G) present the “maximum impact scenario” for grizzly bears, assuming that every acre of existing secure habitat within GBAUs would be affected by motorized routes in the future. Under this scenario, individual GBAUs, which represent potential home ranges for female grizzly bears, could have secure habitat reduced by at most 3-9% from the baseline amounts that currently exist. Given this scenario, a few GBAUs would retain enough secure habitat to potentially support a female grizzly bear living and reproducing in the GBAU, while others would retain moderate amounts that would still likely allow for male and female grizzly bears to move through the GBAUs. A few GBAUs, namely the Lower East Fork and Sleeping Child, could see secure habitat reduced to less than 10% of the GBAU. These GBAUs would likely be the most difficult for a grizzly bear to live in, but we would expect that grizzly bears could still move through these GBAUs.

Reducing secure habitat may or may not affect potential connectivity for grizzly bears moving into the Bitterroot Ecosystem Recovery Zone (BE). While some researchers have shown that grizzly bear survival and reproduction is higher in areas with higher secure habitat (Schwartz et al. 2010, Proctor et al. 2020), there is no known threshold for how much secure habitat is needed for connectivity. Peck et al. (2017; p. 10) identified some of the more likely routes for male grizzly bears to travel from the GYE to the NCDE. These models show likely movement pathways in the vicinity of the Lower East Fork and Sleeping Child GBAUs, as well as the Lost Horse GBAU. Similar modeling has not been conducted for female grizzly bears, nor has modeling been conducted to specifically look at potential areas for movement into the Bitterroot Ecosystem Recovery Zone from the NCDE, GYE, and/or CYE. However, a few bears have begun making their way towards the BE and Bitterroot National Forest from other areas. Based on expansion trends and movement that bears have exhibited coming out of the NCDE and GYE, it is reasonable to expect that some grizzly bears will be able to move through, if not live in, GBAUs on the Bitterroot National Forest.

Currently, the number of grizzly bears using the Forest is very low and numbers are expected to increase slowly over time. This is especially true for female grizzly bears. As mentioned earlier, Proctor et al. (2012) found males move more frequently and over longer distances than females. Males have large home ranges and establish home ranges nearly three times further away from their mother’s home ranges than do female offspring. Females usually establish smaller home ranges than males that overlap with their mother’s home range (Waser and Jones 1983; LeFranc et al. 1987; Schwartz et al. 2003). In doing so, they generally disperse over much shorter distances than male grizzly bears (McLellan and Hovey 2001; Proctor et al. 2004). Therefore, female dispersal is a multi-generational process where females must live year-round in an area, successfully reproduce, and offspring disperse into adjacent, unoccupied habitat. Thus, female grizzly bear presence on the Forest is likely to increase slowly, only if and when population pressure from the NCDE and/or the GYE grows. The earliest detections of grizzly bears from the NCDE found in the intervening area between the NCDE and the GYE were male, and males make up most of the known occurrences in this region (Mace and Roberts 2012).

Effects from high road densities and low amounts of secure habitat in some areas of the action area may result in the displacement of individual grizzly bears, the avoidance of suitable habitat, and/or the reduction of habitat to an unsuitable condition. These changes would only affect bears during the “bear year,” or non-denning season, which is roughly April 1 thru November 30. The effects of displacement and under-use of habitat are tempered by local resource availability, resource condition, seasonal use, and the number of grizzly bears using an area. Under-use of habitat in proximity to Forest roads by grizzly bears does not necessarily preclude use or form a barrier to dispersal and movement across the landscape. Until numbers substantially increase, grizzly bears now occupying the Forest and moving into the Forest in the near future would not likely face significant competition for habitat and resources from other grizzly bears. Thus, displacement from quality habitat is not as likely to result in adverse effects to individuals, as they are likely to have options to move to other areas to find resources.

Male grizzly bears have larger home ranges than females, and males and subadults are independent, more mobile and do not have the same energetic needs as adult females. While displacement may affect behavioral patterns of males and subadults, such as feeding or sheltering, we do not anticipate such effects to be significant to subadult or male grizzly bears.

Displacement effects have more significant impacts on adult female grizzly bears than males or subadults because adult females have higher energetic needs to sustain fitness prior to and during gestation and lactation and when rearing. As such, adult females can less afford the additional energy expended to find high quality foods and shelter if displaced, especially during the early spring or late summer to fall hyperphagia season. During some years, due to poor climatic conditions and resulting food scarcity and/or high levels of forest management activity or recreational activity, displacement effects from areas with high road densities could be more frequent and intense.

Based on the lack of verified female grizzly bear or potentially very low number of female grizzly bears using the action area, and considering the low levels of intra-specific competition, we do not expect that adult female grizzly bears would be affected to levels of injury (through displacement) by high route densities at this time. However, the effects of displacement may increase somewhat as grizzly bear numbers increase over the life of the Forest Plan. Existing road densities and low amounts of secure habitat in some areas and continued presence of these roads under the Forest Plan may at some time over the next 10 years result in adverse effects to some individual female grizzly bears attempting to establish or maintain home ranges in roaded areas. Some adult females may be displaced from key habitats and under certain conditions they may be displaced to levels that impair their normal ability to readily find food resources needed to sustain fitness necessary for breeding and producing cubs, and find shelter.

In sum, not all actions related to access under the Forest Plan, Amendment, and Travel Plan will result in adverse effects. Very few grizzly bears have been verified on the Forest and most, if not all, have been males. We only expect adverse effects to grizzly bears related to access management if, and when, female grizzly bears begin using the action area. We anticipate that the adverse effects from motorized route densities and secure habitat would affect only few adult females over the life of the Forest Plan because few grizzly bears occupy the action area at this time, and as explained earlier, female grizzly bear numbers would grow only slowly over time. Further, we do not expect that all adult females exposed to disturbances related to motorized route densities would suffer significant effects, nor would the effects persist throughout an

individual female's life span. We expect that effects would vary substantially depending upon the wariness of the individual bear, the size of and habitat quality within her home range, the number of other grizzly bears using the particular area, climate conditions, annual food resources, and the nature, intensity and duration of human activity during any particular year. All of these are factors that may affect options available to adult females if displaced. Further, conditions the following year may be considerably different.

Overall, existing motorized routes and any new routes constructed in the future within action area, temporary or permanent, may affect grizzly bears. These effects may be insignificant in some situations or adverse in others. Adverse effects may significantly impact an adult female grizzly bears' ability to find food resources, breed and raise young, and find adequate shelter at some time over the life of the Forest Plan.

## **2. Over-the-Snow Motorized Access**

### ***General Effects***

Available information regarding the effects of snowmobiles<sup>1</sup> on grizzly bears is generally anecdotal, based on grizzly bear responses to various stimuli other than snowmobiles collected during research. Such reports typically lack information related to the timing of disturbance, type of den, winter conditions or other important factors necessary to assess the significance of disturbance to grizzly bears, if any. Some information collected on black bears or other Ursids may have some relevance, but even the data on these species is incidental and largely theoretical. Regarding effects on bears during denning, snow is an excellent sound barrier (Blix and Lentfer 1992) and impacts to denning bears would likely be less in deep snow situations than in shallow snow conditions. It is likely that hibernating bears exposed to meaningless noise, with no negative consequences to the bear, habituate to this type of disturbance (Knight and Gutzweiler 1995).

Den abandonment has been documented in association with industrial activity and direct approach (Reynolds et al. 1986, p. 174; Harding and Nagy 1980, p. 278; Jonkel 1980, p. 3; Craighead and Craighead 1972, p. 31). Harding and Nagy (1980, p. 278) found that one grizzly bear abandoned its den after having the den driven over by a seismic vehicle. On the other hand, other events with seemingly similar levels of disturbance have not led to den abandonment (Jonkel 1980, p. 2; Reynolds et al. 1986, p. 174; Mace and Waller 1997, p. 41; Linnell et al. 2000, pp. 407-408). We are not aware of any primary-source reports in the literature of grizzly bear den abandonment directly attributed to snowmobile activity, nor have other adverse effects on bears from snowmobile use been substantiated. In fact, Mace and Waller (1997, p. 41) reported no abandonment of dens by grizzly bear even though snowmobiles were often seen within 2 kilometers of den sites. Likewise, the Interagency Grizzly Bear Study Team has intensively researched grizzly bear ecology in the Yellowstone Grizzly Bear Ecosystem from the 1970's to present, but this research has never documented den abandonment attributed to snowmobiles.

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<sup>1</sup> "Snowmobile" is the generic term we are using for all types of over-the-snow motorized vehicles, including true snowmobiles, snow coaches, snow bikes, and any other non-wheeled motorized vehicles.

Disturbance from snowmobiles may be most consequential shortly before or after den emergence of a female with cubs (Graves and Reams 2001). Females and their cubs remain in the den site area for several weeks after emergence from dens (Haroldsen et al. 2002, p. 33; Mace and Waller 1997, pp. 37-38). Females with cubs have high energetic needs, and cubs have limited mobility for several weeks after leaving the den. Disturbance levels that cause a female to prematurely leave the den in spring or move from the den area could impair the fitness of the female and safety of the cubs. If cubs attempt to follow their mother, they will likely experience decreased fitness and the family group may be pushed to less suitable habitat. After den emergence in spring, grizzly bears seek sites that melt snow early and produce green vegetation (Kasworm et al. 2010, p. 65). There is limited potential for snowmobiles to occur in these areas and overlap spring grizzly bear habitat for a short period of time after den emergence.

Therefore, it is the Service's opinion that snowmobile-related impacts on post-den emergence females with cubs are more likely to impart serious consequences than any potential impacts to denning grizzly bears. To summarize, we have found no primary-source reports in the literature of grizzly bear den abandonment directly attributed to snowmobile activity (Hegg 2010 pp. 26-27; Servheen 2010 pers. comm. as cited in U.S. Fish and Wildlife Service 2011b, p.34), nor has other substantive adverse effects on bears from snowmobile use has been substantiated (Mace and Waller 1997, p.41; U.S. Forest Service 2006, pp.3-263 3-373).

### ***Effects in the Action Area***

Some large, higher elevation areas that contain potential denning habitat does occur within the action area, but 85% of the potential denning habitat occurs in areas where over-snow motorized access is prohibited. The remaining 15% of denning habitat does occur in areas where over-the-snow motorized use may occur, as described in the BA (U.S. Forest Service 2020, p. 28).

At this time, denning of grizzly bears has not been documented in the action area and the likelihood of grizzly bears denning in the action area anytime soon is low. Furthermore, in the near future, it is probable that any grizzly bears that move into or through the action area will be males. The likelihood that an adult female bear will den and have cubs in the action area is very low over the life of the Plan. Given that the overlap between late spring over-the-snow motorized use and potential denning habitat is also very small in both space and time in the action area, the chances of a bear-snowmobile encounter are expected to be very low. Therefore, the effects to grizzly bears due to late season over-the-snow motorized use are discountable, or very unlikely to occur.

## **3. Non-Motorized Access and Recreation**

### ***General Effects***

The potential exists for non-motorized activities to result in disturbance effects to grizzly bears. Multiple studies have documented displacement of individual grizzly bears from nonmotorized trails to varying degrees (Schallenberger and Jonkel 1980; Jope 1985; McLellan and Shackleton 1989; Kasworm and Manley 1990; Mace et al. 1996; White et al. 1999). As reviewed in Mattson 2019, the effects can be of shorter or longer duration, and result in varying responses, generally flight, displacement, or avoidance. In most situations, such impacts would likely be short-term

and would range from no response from a grizzly bear to a grizzly bear temporarily fleeing the area. Grizzly bears may adapt to consistent, predictable activity and may notice the activity but not flee from it (Jope 1985; Mattson 2019). This reaction is more likely to occur on trails with regular use. On non-motorized trails that receive low amounts of human use, human activity may result in a grizzly bear temporarily fleeing from the disturbance, expending extra amounts of energy (McClellan and Shackleton 1989; Mattson 2019b).

Due to varying skill levels and speed of travel of mountain bikers, they are less likely to travel in close groups and maintain verbal contact with other riders, resulting in minimizing the amount of noise and reducing the potential for early detection and avoidance by grizzly bears. Thus, mountain biking may elicit greater flight response from grizzly bears than other non-motorized use due to the higher potential for sudden encounters (Quinn and Chernoff 2010, Mattson 2019, Herrero and Herrero 2000 *in* Servheen et al. 2017). Sudden surprise encounters can also result in human-grizzly bear conflicts, depending on whether the bear flees or charges. Often, grizzly bears disturbed by non-motorized use will exhibit increased nocturnal activity and decreased daytime activity when non-motorized use is most likely to occur (Mattson 2019).

### ***Effects in the Action Area***

Non-motorized activities such as mountain biking, horseback riding, and hiking do and will continue to occur throughout the action area. Due to the low number of grizzly bears in the action area, it is unlikely that many, if any, will experience disturbance effects as a result of non-motorized recreation. If any grizzly bears do experience disturbance from non-motorized use, we expect effects will be insignificant, as grizzly bears that are moving in to the action area will likely adapt to such use or choose other use areas. Such impacts are not likely to significantly affect an individual grizzly bear's ability to breed or find food or shelter. Grizzly bears are habitat generalists and would be able to shift their use to low disturbance areas within their home ranges during activity, or establish home ranges in areas with very little non-motorized use. As such, we do not anticipate adverse effects to grizzly bears as a result of non-motorized access under the Forest Plan at this time. Any future proposals for specific high-use or high-speed non-motorized use would be subject to site-specific review at the time of the proposal.

## **B. Livestock Grazing**

### ***General Effects***

Effects of livestock grazing on grizzly bears are generally related to depredations of livestock by grizzly bears, disposal of livestock carcasses, storage of human food and stock feed, and grizzly bear habituation, food conditioning, and mortality risk associated with these activities. Depredating bears may become food conditioned resulting in management actions that remove bears from the population. Although grizzly bear conflicts with cattle do exist, the more significant problems have been with sheep (Orme and Williams 1986). The adverse effects of domestic sheep grazing on grizzly bears are well documented (Knight and Judd 1983, Johnson and Griffel 1982). Sheep grazing in occupied grizzly bear habitat poses substantive risks to grizzly bears since bears kill sheep much more readily than other livestock and because sheep are often closely tended by herders typically armed and protective of their flock. In one study in the YGBE, of 24 grizzly bears known to use livestock allotments, 10 were known to kill livestock (Knight and Judd 1983). Of these bears, 7 killed sheep, 5 of which were trapped and fitted with

radio transmitters. All but one radio collared grizzly bear cub that had the opportunity to kill sheep did so. Grizzly bears that kill livestock include a range of ages and both sexes (Johnson and Griffel 1982).

Being an opportunistic feeder, any individual grizzly bear can learn to exploit livestock as an available food source just as easily as they habituate to other human food sources (Johnson and Griffel 1982). Knight and Judd (1983) reported several differences between cattle and sheep conflicts with grizzly bears. They found that all radio-collared grizzly bears known to have come in close contact with sheep killed sheep, but most grizzly bears that encountered cattle did not make kills. They also found that all known cattle kills were carried out by adult bears 7 years or older, while both adults and subadults from 1 to 13 years old killed sheep. Grizzly bears that killed sheep, usually took multiple sheep over several days. However in each instance when the sheep were moved out of the area the predation ended (Johnson and Griffel 1982). Livestock carcasses may also attract grizzly bears. Grizzly bears have a strong tendency to return to a carcass for two or more feedings (Johnson and Griffel 1982). Therefore, proper treatment or disposal of livestock carcasses greatly reduces the potential attractants for grizzly bears.

### *Effects in the Action Area*

The Forest has 18 cattle allotments and no domestic sheep allotments within the action area. The amount of cattle grazing on these allotments have been decreasing over time (U.S. Forest Service 2020, p. 28). As reported in the BA, eight permittees grazed 1,634 animal unit months (AUMs) on eight allotments in 2014, and six permittees grazed 892 AUMs on six allotments in 2015 (U.S. Department of Agriculture 2016c). The amount of grazing is not limited to existing levels and could increase in the future during the life of the Forest Plan, although stocking levels are not expected to increase. Horses and mules may be permitted for use on NFS lands, primarily in support of outfitter and guide operations or Forest Service administrative use in wilderness areas. There is no evidence of conflicts with bears due to depredation or forage competition, so horse and mule grazing permits are expected to have no effect on any grizzly bears occurring in the action area. No effects from either the Travel Management Plan or the Amendment would alter livestock grazing on the Forest, and therefore no additional effects are expected related to the Amendment or Travel Management Plan.

No grizzly bear conflicts related to grazing or depredations on livestock have been documented in the action area. Based on the information for livestock grazing in the action area (no sheep allotments, very low amount of grizzly bear use, and the history of no livestock depredations), the likelihood of adverse impacts to grizzly bears related to livestock grazing in the action area during the life of the Forest Plan is low. If the number of grizzly bears using the action area increases, the risk of conflicts with or depredations on livestock may also increase over time. The most likely effects would be related to food conditioning or habituation of a bear, resulting in the potential need for management removal or relocation. For now and over the life of the Forest Plan (roughly 10 years), we expect that the likelihood of a grizzly bear becoming habituated or food conditioned related to grazing are so unlikely, given the very few number of bears and the very small grazing program, such that the effects to grizzly bears are discountable, or extremely unlikely to occur.



## **C. Food and Attractant Storage and Site Development**

### ***General Effects***

Improperly stored food, garbage, and/or livestock or pet foods can lure grizzly bears to areas near people and pose a significant risk of habituating bears to human presence and/or conditioning grizzly bears to seek out anthropogenic foods and attractants. Food conditioned grizzly bears enter unsecured garbage receptacles, sheds, and other buildings in search of a reward. Accessibility to human related attractants and conditioning to those rewards can lead to management removal of grizzly bears and additionally, mortality of grizzly bears by people defending their life and property.

Incidence of property damage or conflicts associated with human related foods is inversely proportional to the availability of high quality grizzly bear foods found in the wild; during periods of poor natural food production incidences of human-grizzly bear conflicts typically increase. When poor seasonal bear foods exist in part of or through the entire non-denning season in the GYE and NCDE, the incidences of bears causing property damage and obtaining anthropogenic foods increased significantly over average or good years (Gunther et al. 2004, Manley 2005). The conflict relationship is magnified when the availability of late season natural foods such as whitebark pine seeds is insufficient to meet the high energy requirements during hyperphagia (Mattson et al. 1992).

Numerous studies in the NCDE elucidate the importance of late-season frugivory, especially globe huckleberries (*Vaccinium globulare*), by grizzly bears (Martinka and Kendall 1986, Weaver et al. 1990). Berry failure due to drought or destruction of plants by fire would force grizzly bears to range more widely than in normal periods of seasonal availability (Blanchard and Knight 1991). Therefore, grizzly bears face an increased risk of encounters with humans and ultimately human-caused mortality during the autumn season. Grizzly bears in some areas that avoided trails with human activity during part of the year changed this avoidance behavior when a favored berry resource came into season (Donelon 2004). Although grizzly bears still had a low tolerance for trails with high human activity, the tendency to approach areas of human activity when nutritional and energy needs are high could put individual bears at an increased risk of immediate conflict or condition them to the presence of people, which could lead to conflicts later in time.

### ***Effects in the Action Area***

The Forest has 27 developed sites in the action area that provide for recreational and/or administrative overnight stays. Developed sites can pose risks of unsecured attractants and food left by campers, hunters, and people using the sites. Habituated grizzly bears learn to seek out developed sites for food rewards. Habituation and food conditioning of grizzly bears is a concern in all grizzly bear populations. Throughout the distribution of grizzly bears, habituation/food conditioning remains a fairly serious risk to individual grizzly bears.

Attractant management is currently not required within the action area with the exception of the Anaconda-Pintler Wilderness area. Although not required elsewhere, the Forest can and sometimes does incorporate food storage requirements into proposed project alternatives. Food storage orders substantially reduce the potential for adverse effects to bears as a result of food

conditioning and habituation at developed sites as well as dispersed human use. Without a food storage order within the action area (with the exception of the Anaconda-Pintler wilderness), there is potential for conflicts to occur between humans and any grizzly bears moving into or through the action area, possibly resulting in adverse effects to some individual grizzly bears. No grizzly bear-human conflicts have been reported to date within the action area. However, the potential for conflict between grizzly bears and humans is likely to increase, albeit slowly, as the density of grizzly bears increases within the action area.

In summary, no grizzly bear mortalities associated with improper food storage or site conflicts have been reported within the action area. However, improper storage of attractants and foods can present a risk of food conditioning grizzly bears. Thus, throughout the distribution of grizzly bears, habituation/food conditioning remains a risk to individual grizzly bears. Therefore, it is reasonable to expect that some risk of adverse impacts, though low (based on grizzly bear numbers, bear numbers are likely to increase slowly over time, and history of no attractant related conflicts in the area), to some grizzly bears related to attractant management exists over the life of the Forest Plan.

## **D. Vegetation Management**

### ***General Effects***

Vegetation management may impact grizzly bears as a result of the short-term disturbance. Longer-term effects related to vegetation management include impacts to grizzly bear cover and forage. A decrease in the amount of cover may result in different effects to grizzly bears and their habitat. If cover is limiting in the project area, either by the amount or distribution, vegetation management may result in negative impacts (Ruediger and Mealy 1978). Reduced cover may increase the visibility of grizzly bears, which may potentially increase their vulnerability to illegal human-caused mortality and/or contribute to displacement from preferred habitats. However, if cover is not limited in a project area, timber harvesting may have either no effect or a positive effect in those situations where food abundance or distribution is improved. By removing or reducing overstory vegetation through harvesting, slashing and/or burning, sunlight reaches the forest floor or clearing and grizzly bear food production may be increased (Ruediger and Mealey 1978). This includes foods such as berries and succulent forbs.

In a study on use of harvested stands, Waller (1992) found that use of these stands increased during the berry season, due to some harvested stands having high berry production. If food production or distribution is improved but human activity is not controlled after the completion of harvest activities, negative impacts on grizzly bears may occur due to an increase in the potential for conflicts between humans and grizzly bears (Ruediger and Mealey 1978). Waller (1992) found that of the harvested stands that he studied, those with the highest grizzly bear use had limited access for people due to closed gates and/or over-grown roads. Grizzly bears within his study area that used harvested stands were found at higher elevations and spent little time in lower elevation stands where harvest was most common. Waller attributed this to human use of those lower, more accessible harvested stands. Waller also found that grizzly bears avoided stands where the vegetation had not recovered enough to provide security cover and preferred to use stands that were 30 to 40 years post-harvest.

Zager (1980) found that differences of shrub responses depended on the type of treatment that occurred post-harvest. Among the key shrub grizzly bear foods on clearcut sites where slash was bulldozer-piled before burning, Zager found a consistent decline in canopy coverage when compared to old burns. This is likely due to the extreme heat created by burning slash piles which may kill rhizomes and root crowns and bulldozer use which may also destroy rhizomes and root crowns. In those areas where slash was either broadcast burned or not treated, key grizzly bear shrub foods were generally found throughout the sites, except on skid roads and other severely disturbed areas. On relatively mesic sites, globe huckleberry, mountain-ash and serviceberry generally increased in cover.

Vegetation management activities that would occur during the grizzly bear denning season are not likely to impact grizzly bears. Snow is an excellent sound barrier (Blix and Lentfer 1992) and impacts to denning bears would likely be less in deep snow situations than in shallow snow conditions. It is likely that hibernating bears exposed to meaningless noise, with no negative consequences to the bear, habituate to this type of disturbance (Knight and Gutzweiler 1995).

Often, temporary roads are constructed and/or restricted roads are used in order to access harvest units. The impacts of roads are discussed above in the '*General Effects of Roads on Grizzly Bears*' and the '*Effects of Motorized Access in the Action Area*' sections above.

Helicopters may also be used in vegetation management projects, and in general reduce impacts to grizzly bears where they reduce or eliminate the need for new roads. Helicopter use may elicit a response in grizzly bears. Effects may range from a simple awareness of the helicopter, short-term disturbance or flight response, or displacement from an area. In timbered habitats, McLellan and Shackleton (1989) found that an overt avoidance or displacement response required high intensity helicopter activity, such as carrying equipment within 200 meters of a grizzly bear. Helicopter use that is short in duration and low in frequency, would not likely result in significant affects to grizzly bears. Extended helicopter use with multiple passes could interfere with the normal behavior patterns of grizzly bears. However, when considering long-term habitat effects, helicopter use does not use or require roads and may not pose the same chronic displacement effects or mortality risks that roads-based operations do. Helicopter use is a temporary event, whereas roads are typically chronic features on the landscape that facilitate access for people into bear habitat long after a project is complete. Consequently, while short-term helicopter activities may impact grizzly bears, they do not impart the same chronic habitat effects as roads. If repeated, low altitude flights continue into multiple seasons, the effects upon grizzly bear behavior (i.e., avoidance and more than just temporary displacement) may become more substantial.

The effects to grizzly bears of repeated, low altitude flight paths that follow open roads may be partially offset by the existing under-use of habitat in the immediate vicinity of the roads due to the "avoidance" by grizzly bears of habitat in close proximity to open roads. In many cases, the effects of helicopter logging that occurs in roaded habitat would have insignificant effects to grizzly bears. However, helicopter logging in areas that are not highly roaded could result in adverse effects to grizzly bears adapted to the use of more secure habitat. Thus, the effects of helicopter use on grizzly bears can vary significantly; effects will be determined through an analysis of site-specific activities and conditions in the area.

## ***Effects in the Action Area***

The Forest Plan identified 364,176 acres as suitable for timber production within the action area (approximately 30% of the action area). Site specific project analysis will determine the type and extent of harvest and potential effects to grizzly bears. Every proposed vegetation management project within the action area would consider potential effects to grizzly bears during the site specific project analysis process. Based on our history of consultation on vegetation management projects, information in our files, and the analysis under the ‘*General Effects of Vegetation Management*’ section above, we do not anticipate that vegetation management activities by themselves would result in effects to grizzly bears that would be so significant as to impact breeding, feeding or sheltering.

Activities that occur along with vegetation management activities such as temporary road construction, restricted road use, or helicopter use may result in additional effects to grizzly bears. Such effects could range from insignificant to significant depending on site-specific information. The effects of temporary roads are discussed in the effects of motorized access section above. General effects of helicopter use are discussed above in the ‘*General Effects of Vegetation Management*’ section. Potential effects that may occur as a result of temporary road use and/or helicopter use associated with vegetation management would be considered in a site-specific analysis. Although we anticipate more grizzly bears will inhabit the action area in the future, the number of bears is likely to be small relative to the size of the action area and numbers would increase slowly. Grizzly bears that may be affected by helicopter use or temporary roads over the life of the plan are likely to have options to move out of the area, given the low level of intra-specific competition for habitat.

In summary, with the exception of related motorized access management or helicopter use, we do not anticipate adverse effects as a result of vegetation management within the action area. Related motorized access and helicopter use may or may not result in adverse effects to grizzly bears and any effects would be considered in a site-specific analysis.

## **E. Fire Management**

### ***General Effects***

Fire management may result in disturbance and displacement impacts to grizzly bears. Fire suppression activities involve the presence of humans and often include the use of motorized equipment. We expect that grizzly bears would likely leave an area on their own accord in advance of an approaching fire and therefore be out of the area associated with fire suppression activities. However, if suppression activities were to take place prior to an approaching fire, grizzly bears may still be in the vicinity. Some effects from disturbance may be caused by the overall increase in human activity in a particular area. These activities may include increased vehicular traffic, aerial support and fire camps, any of which may affect a grizzly bear prior to their leaving the area. The possibility of a direct encounter with a grizzly bear by a person or group of people involved in fire management activities is remote.

Indirect effects from fire suppression activities may result from opening previously closed roads, constructing new roads or temporary roads, constructing firebreaks, and/or constructing machine lines. These actions may temporarily contribute to the open and total road densities or may result in effects to grizzly bears similar to effect of roads on grizzly bears. Research has confirmed the adverse impacts of roads on grizzly bears (see the ‘*General Effects of Roads on Grizzly Bears*’ section above). In addition, food and garbage storage at activity sites and camps may attract grizzly bears and contribute to risks. Such effects are also discussed above (see the ‘*Effects of Food and Attractant Storage and Habituation*’ section above).

Wildland fires for resource benefit are typically allowed to burn where there is some degree of certainty that the fire would go out naturally or could be contained within predefined lines. These types of fires, when allowed to burn, can result in short-term negative effects and/or long-term beneficial effects depending on the vegetation species and fire severity. Some foraging habitat and/or cover may be affected in the short-term. However, natural fire often stimulates the understory and/or increases the vegetative diversity (forbs, grasses, berry-producing shrubs) in high quality grizzly bear habitat, benefitting grizzly bears in the long-term.

Fuels treatments could include prescribed fire, mechanical treatment, and/or chemical treatment. Refer to the ‘*General Effects of Vegetation Management*’ section above for potential effects to grizzly bears.

### ***Effects in the Action Area***

Suppression efforts and use of prescribed burning would continue under the Forest Plan. The acres available for these activities and locations vary across the action area. The effects on grizzly bears associated with fire suppression and/or wildland fire for resource benefit would be analyzed in emergency consultation after the suppression activities are complete. A site-specific analysis of effects on grizzly bears and grizzly bear habitat as a result of fuel treatments, including prescribed burning, would occur prior to implementation of a project. Refer to the ‘*Effects of Vegetation Management in the Action Area*’ section above for potential effects to grizzly bears. As mentioned above, such treatments by themselves would not likely result in adverse impacts to grizzly bears.

In summary, with the exception of related access management or helicopter use, we do not anticipate adverse effects as a result of fire management in the action area. Related access management and helicopter use may or may not result in adverse effects to grizzly bears and any effects would be considered in a site-specific analysis.

## **F. Energy and Mineral Development**

### ***General Effects***

Energy and mineral development encompasses the location and extraction of mineral materials (e.g., sand, gravel, rock), the location and extraction of locatable minerals (e.g. gold, silver, copper), and mineral leasing for oil, gas, coal, geothermal resources, potassium, sodium, phosphates, oil shale, and sulfur, which includes exploration and surface occupancy (extraction). These types of development projects may result in loss of habitat within the footprint of the mine

or development site, or associated roads. Disturbance to grizzly bears from road use and mining or energy development activities and displacement from habitat from road use or mine development may also occur as well as impacts to habitat connectivity. New roads leading to mining or energy development sites may provide access to grizzly bear habitats.

### ***Effects in the Action Area***

At this time no gas or oil developments occur within the action area. Although there are many active mining claims on the Forest, at this time there are no active mining operations. Minor activities such as surveying and collecting samples on a claim on NFS lands are allowed at any time, but no activities such as construction of roads, building cabins, or caching of food or equipment are authorized without further review. Before an active operation could begin, the claimant would have to file a notice of intent and a plan of operations with the Forest Service. A plan of operations would trigger the NEPA process and ESA Section 7 consultation. At this time there are no notices of intent or plans of operation on the Forest. The Forest also receives numerous requests for riprap material, sand, gravel, and decorative/landscaping stone. Pit or collecting areas open to the public do occur within the action area as well as gravel pits and roadside borrow areas used to provide rock for administrative use.

Given the small footprint and overall low level of mineral and energy development activity in the action area and the very low grizzly bear use of the action area, any grizzly bears that occur in the vicinity of activity related to mineral and energy development activities would likely have options to move to more undisturbed, available habitat. Any effects related to access management are covered in the access management section above. If grizzly bears are using the area in the vicinity of a proposed activity related to mineral development, we would expect some level of short-term disturbance from areas of activity. The effects of such are not likely to be adverse to grizzly bears.

### **G. Effects Summary for Proposed Action**

In reviewing the effects of the Forest Plan, proposed Amendment, and Travel Plan on grizzly bears in the action area, Forest management that may have the potential to adversely impact grizzly bears include both wheeled motorized access and attractant storage. We do not anticipate adverse effects as a result of the Forest Plan, proposed Amendment, or Travel Plan as they guide general practices for over-the-snow motorized access, non-motorized access, livestock grazing, vegetation management, fire management, or energy and mineral development (except where these actions include access management or attractant storage). However, specific projects proposed under the Forest Plan with the proposed Amendment will need to undergo project-specific consultation, at which time additional information can be considered.

Effects related to access management and food and attractant storage will vary depending on site-specific information. Not all actions related to motorized access proposed under the Forest Plan will result in adverse effects. Very few grizzly bears have been verified on the Forest and most, if not all, have been males. We only expect adverse effects to grizzly bears related to motorized access management if, and when, female grizzly bears begin using the action area for reasons stated above.

If female grizzly bears begin to use the action area, specific areas with higher motorized route densities and/or lower amounts of secure habitat may lead to the under-use of suitable habitat by grizzly bears and may significantly impact some grizzly bears' ability to find food resources, breed and raise young, and find shelter. However, grizzly bears moving into the action area may be able to tolerate the existing amount of secure habitat, move through the action area, and possibly establish home ranges that optimize available resources, even outside of the Recovery Zone. Thus, not all female grizzly bears that may use the action area during the life of the Forest Plan will experience significant effects related to access management.

Human access into grizzly bear habitat can lead to the habituation of grizzly bears to humans. Habituation to human foods and attractants in turn increases the potential for conflicts between people and grizzly bears. Habituated grizzly bears often obtain human food or garbage and become involved in nuisance bear incidents, and/or threaten human life or property. These grizzly bears are considered food conditioned and generally experience high mortality rates as they are eventually destroyed or removed from the population through management actions.

Currently, no food and attractant storage order is in place within the action area with the exception of the Anaconda-Pintler wilderness area. No grizzly bear mortalities have been reported within the action area related to improper food storage. However, proper food and attractant storage is learned behavior and requires public cooperation. As grizzly bears increase in numbers and expand across the action area, we cannot rule out the potential risk that grizzly bears may become habituated and food conditioned and be subject to potential management removal at some time during the life of the Forest Plan. Therefore, it is reasonable to expect that some risk, albeit low (based on grizzly bear numbers and history of conflicts in the area), of adverse impacts to grizzly bears related to attractant management exists over the life of the Forest Plan.

Although the Forest's management of grizzly bear habitat may result in direct and indirect adverse effects on individual grizzly bears, we do not anticipate that these effects will have appreciable negative impacts on the grizzly bear populations at the range-wide scale. Nor will the effects appreciably affect recovery of grizzly bears in the Bitterroot Ecosystem, given the vastly remote nature of the Recovery Zone.

While few to no grizzly bears are currently known to exist in the action area, the cumulative interaction of the Forest Plan, Travel Management Plan, and Amendment serve to enhance connectivity between known grizzly bear populations and potential future grizzly bear populations that may inhabit the Bitterroot Ecosystem and the action area. The NCDE, Selkirk, and Cabinet-Yaak populations could serve as a source of grizzly bears for the Bitterroot Ecosystem. It would require movement of both male and female grizzly bears to establish a population in the Bitterroot Ecosystem, and because females disperse less often and for shorter distances than males, occupancy by female bears is likely to take much longer to achieve than the movement by male bears.

Several likely potential movement corridors exist on the Forest. Researchers have identified the northern end of the Sapphire Mountains as well as the southern end of the Bitterroot National Forest as potential areas for connectivity (Walker and Craighead 1997). Peck et al. (2017) modeled potential paths for male-mediated gene flow to and from an isolated grizzly bear population and also showed the potential for male grizzly bears to move through the action area through the Sapphire and Bitterroot Mountains. The Forest Plan, proposed Amendment, and

Travel Management Plan provide the opportunity for conditions that are compatible with supporting the movement of grizzly bears in many parts of the Forest, particularly given the extensive areas that provide secure habitat for grizzly bears in the action area.

The Forest has managed and will continue to manage the lands in such a way that has allowed grizzly bears to begin slowly expanding into the action area. Thus, although individual grizzly bears may be adversely affected at times over the life of the Forest Plan, including the proposed Amendment, and implementation of the Travel Plan, we anticipate that grizzly bear use will continue to increase within the Forest into the future.

## VI. CUMULATIVE EFFECTS

The implementing regulations for section 7 of the Act define cumulative effects as those effects of future state, tribal, local, or private actions that are *reasonably certain to occur* in the action area considered in this biological opinion. According to section 7 regulations (402.17(a)), conclusion of *reasonably certain to occur* must be based on clear and substantial information, using the best scientific and commercial data available. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. Due to the broad geographic scope of the Forest Plan and, therefore, the action area, it is difficult to comprehensively assess all of the future, non-Federal activities reasonably certain to occur in the action area that may affect the grizzly bear. This analysis of cumulative effects is based on an assessment of land ownership and use patterns, and the patterns of grizzly bear mortality caused by non-Federal activities, as discussed above in the *Status of the Species* and *Environmental Baseline* sections.

Within the action area, the Department of Natural Resources and Conservation (DNRC) manages the Sula State Forest as well as numerous small parcels scattered throughout the Bitterroot Valley. State lands within the action area were mostly burned during the fires of 2000 and were salvage logged shortly thereafter. Effects to grizzly bears were analyzed and consulted on for DNRC's Habitat Conservation Plan (Montana Department of Natural Resources 2010, Department of Interior, Fish and Wildlife Service 2018). The DNRC's state forest land management plan emphasizes intensively managing for healthy and biologically diverse forests to provide a reliable and sustained income. The state forest land management plan also directs the transportation system to be planned for the minimum number of road miles. DNRC will only build roads that are needed for current and near-term management objectives, as consistent with the other resource management standards. DNRC would determine the appropriate road density to meet Threatened and Endangered Species, Big Game, Sensitive Species, and Biodiversity Resource Management Standards, as well as road surface protection and other resource needs. (Montana Department of Natural Resources and Conservation 2010). State lands were not considered in the analysis above regarding secure habitat for grizzly bear. Any secure habitat that is provided would be in addition to the existing baseline previously analyzed

Montana Department of Fish, Wildlife and Parks (FWP) manages two Wildlife Management Areas (WMA) within the action area (Threemile and Calf Creek). The primary management goal of both WMAs is to provide winter range for elk and compatible recreational opportunities for the public. Public recreation in these areas may increase the likelihood of grizzly bear human interactions or displace grizzly bears, similar to the effects discussed for Forest lands. FWP has



also completed a grizzly bear management plan for western Montana and southwestern Montana. These plans establish goals and strategies to manage and enhance grizzly bear populations and to minimize the potential for grizzly bear-human conflicts. A long-term goal is to allow the populations in western and southwestern Montana to reconnect through the intervening, currently unoccupied habitats. FWP is also very active in providing public information and education about conserving grizzly bears and their habitat. This includes bear management specialists, including one in Missoula near the action area, who provide information and assistance to landowners on appropriate ways to secure food and bear attractants and respond to reports of conflicts with bears. These specialist positions have a proven track record of resulting in a reduction of human-caused grizzly bear mortalities.

The State of Montana regulates hunting for black bears and other wildlife species. Hunting of grizzly bears has not been allowed in Montana since 1991. There is a potential for grizzly bear mortality by hunters to occur as a result of mistaken bear identification or self-defense, especially in proximity to the carcasses of harvested animals. MFWP provides a variety of public information and education programs, including a mandatory black bear hunter testing and certification program, to help educate hunters in distinguishing the two species, reducing the potential for mistaken identity. The potential exists, however, for grizzly bear mortality due to mistaken identity or defense of life from bear hunters or other hunters in the action area.

Private lands occur within and adjacent to the Forest. The human population within the action area has been growing over the past few decades and growth is expected to continue. Such growth is expected to result in an increase of residential development of private lands within the action area and can result in habitat loss, habitat fragmentation, and increases in human-grizzly bear conflicts. Recreation, livestock grazing, ranching and farming, and food and attractant storage issues on private land can create grizzly bear-human conflicts by providing attractants to grizzly bears. Once grizzly bears become habituated and a nuisance, they are typically removed. Human population growth could also result in additional grizzly bear attractants and further increase the potential for grizzly bear-human conflicts. As more people use private land and adjoining federal land for homes, recreation or business, the challenge to accommodate those uses in ways that continue to protect the grizzly bear population increases.

Recreation, livestock grazing, and attractant issues on private land will likely continue to create grizzly bear-human conflicts. However, large federal land ownership and large blocks of Wilderness, Wilderness Study Areas, and Inventoried Roadless Areas on the Forest within which human access is restricted by regulation and topography serve to reduce the impacts of larger residential human populations on grizzly bears. While federal land management cannot entirely compensate for such impacts on private land, management under the Forest Plan would continue to provide habitat for grizzly bears on Forest Service lands.

Any private individual's non-compliance with the Forest's access management restrictions is an illegal activity. While future illegal use of the Forest via motorized access in areas unauthorized for such use may occur within the action area, such illegal use is not considered a Forest (federal) action. Given past experiences on the Forest (as described in the *Environmental Baseline* section above), the Service believes some instances of illegal motorized use are reasonably certain to occur in the action area in the future. Therefore, we acknowledge cumulative effects to grizzly bears may occur as a result of illegal motorized access, but the information as to the length, duration, amount of use, type of use, and location, among other conditions, is and will continue

to be unknown until such time that illegal use is discovered. The probability of long-term illegal motorized access and probability of illegal access coinciding with the presence of grizzly bears is anticipated to be low but is unknown. As such, the potential consequences to grizzly bears are uncertain. Illegal motorized access is expected to be spatially disparate and temporary and is not likely to collectively cause an adverse effect because most users follow travel regulations and when illegal use is observed or when user-created roads become apparent the Forest corrects the situation as soon as they are able.

## VII. CONCLUSION

After reviewing the current status of grizzly bears, the environmental baseline for the action area, the effects of the action, and the cumulative effects, it is our biological opinion that the effects of the continued implementation of the Forest Plan is not likely to jeopardize the continued existence of the grizzly bear. No critical habitat has been designated for this species therefore none will be affected. Implementing regulations for section 7 (50 CFR 402) define “jeopardize the continued existence of” as to “engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.” Our conclusion that the Forest Plan is not likely to jeopardize the continued existence of grizzly bears is based on the information presented in the 2020 biological assessment (U.S. Forest Service 2020), correspondence during this consultation process, information in our files, and informal discussions between the Service, the Forest, and other personnel.

Forest Plan direction may occasionally result in adverse effects to individual grizzly bears over the life of the plan, particularly as a result of access management direction and inadequate food and attractant storage. Based on the best available scientific information reviewed in this consultation, adverse effects on grizzly bears as a result of the Forest Plan will not negatively impact the recovery of grizzly bears. Further, we expect the Forest Plan direction will result in conditions that support grizzly bear use of the Forest for dispersal or exploratory movements, and potentially some home range establishment at some point in the future, albeit at densities lower than those in the recovery zones. Such use of the Forest by grizzly bears may, over time, benefit grizzly bears. It is our opinion that the proposed action would not appreciably reduce the likelihood of both the survival and recovery of the grizzly bears as a species. Below we summarize key factors related to the effects of the Forest Plan on grizzly bears as detailed and analyzed in this biological opinion. Key points of our rationale for this non-jeopardy conclusion include, but are not limited to, the following factors:

- In 1993, the Recovery Plan articulated the conservation needs for the recovery of grizzly bears. The Recovery Plan stated that recovery zones include areas large enough and of sufficient habitat quality to support recovered grizzly bear populations, and that although grizzly bears are expected to reside in areas outside the recovery zones, only habitat within the recovery zone is needed for management primarily for grizzly bears. The action area lies outside of the recovery zones.
- The recovery plan strategy has been successful and has resulted in growth of the grizzly bear populations. Grizzly bears in the GYE, NCDE, and CYE populations have expanded into areas outside of the recovery zones. Based on the best available

information, the Service concludes that the status of the both the GYEE and NCDE grizzly bear populations are robust and have reached or are nearing recovery. The population trend for the CYE has changed from declining to slightly increasing.

- The best information indicates that grizzly bear densities are currently low on the Forest. Grizzly bears have low reproductive rates, long generational times (about 10 years), and are slow to disperse across landscapes and so sufficient habitat is likely to be available to individual bears as intra-specific competition for resources would be low.
- Motorized routes in some portions of the action area may result in displacement of some female grizzly bears, if and when they occur in the action area, from key habitat at some time over the life of the Forest Plan. However, some grizzly bears are able to persist in areas with higher levels of human pressure, as documented by verified reports of grizzly bears, including females with cubs (indicating home range use), outside of the recovery zones. Based on the Forest Plan and decisions that have occurred to date and are anticipated to occur, the overall levels of open motorized routes within the action area will likely be reduced over the life of the Forest Plan. Most new road construction would be temporary. Most new permanent road construction is not expected to be open to the public (U.S. Forest Service 2020, p. 26).
- At this time, denning of grizzly bears has not been documented in the action area and the likelihood of grizzly bears denning in the action area anytime soon is low. Furthermore, in the near future, it is probable that any grizzly bear that moves into or through the action area will be males. The likelihood that an adult female bear will den and have cubs in the action area is low. As such, effects to denning grizzly bears within the action area would likely be discountable and/or insignificant.
- Lack of a food storage order in the action area may result in grizzly bear-human conflicts and grizzly bear mortalities at some point in the future. No reported grizzly bear conflicts or mortalities related to improper food or attractant storage have occurred to date within this area.
- Based on the number of grizzly bears that occur now and are likely to inhabit the Forest over the life of the Forest Plan, we do not anticipate high levels of conflict and/or grizzly bear mortality within the action area over the life of the Forest Plan. However, as grizzly bears increase in numbers and expand within the action area, we cannot rule out the potential risk that grizzly bears may become habituated and food conditioned and be subject to potential management removal at some time during the life of the Forest Plan. Therefore, it is reasonable to expect that some risk exists, albeit low (based on grizzly bear numbers and history of conflicts in the area), of adverse impacts to grizzly bears related to attractant management.
- Montana Fish, Wildlife and Parks' bear specialist program is expected to continue to work with the public to reduce risks to grizzly bears on private and public lands. In cooperation with other agencies, this program has made notable strides toward an informed public and reduced the availability of attractants to grizzly bears on private and public lands.

- No grizzly bear conflicts related to grazing or depredations on livestock have been documented in the action area. Based on the information for livestock grazing in the action area (no sheep allotments, very low amount of grizzly bear use, and the history of no livestock depredations), the likelihood of adverse impacts to grizzly bears related to livestock grazing in the action area during the life of the Forest Plan is very low. If the number of grizzly bears using the action area increases, the risk of conflicts with or depredations on livestock may also increase over time. For now and over the life of the Forest Plan (10 years) however, adverse effects related to grazing are unlikely.
- As previously explained, we also do not anticipate adverse effects as a result of vegetation management, fire management, or energy and mineral development, except for the potential effects that may be associated with access management and food and attractant storage discussed above.
- Even though much of the action area is outside of Grizzly Bear Recovery Zones, the Forest has managed and will continue to manage the lands in such a way that has allowed grizzly bears to expand into the action area. Thus, although individual grizzly bears may be adversely affected at times over the life of the Forest Plan, we anticipate that grizzly bears use will continue to increase within the Forest into the future.
- We do not anticipate any adverse effects to grizzly bears within the Bitterroot Ecosystem Recovery Zone related to access management, since the entire portion of the Recovery Zone in the action area is secure habitat, unaffected by roads.

Recovery zones were established to identify areas necessary for the recovery of a species and are defined as the area in each grizzly bear ecosystem within which the population and habitat criteria for recovery are measured. Recovery zones are areas adequate for managing and promoting the recovery and survival of grizzly bear populations (USFWS 1993). Areas within the recovery zones are managed to provide and conserve grizzly bear habitat. The recovery zones contain large portions of wilderness and national park lands, which are protected from the influence of many types of human uses occurring on lands elsewhere. Multiple use lands are managed with grizzly bear recovery as a primary factor. As anticipated in the Recovery Plan, grizzly bear populations have responded to these conditions, have stabilized, and are increasing or at or near recovered levels in some recovery zones. In addition, the grizzly bears have been expanding and continue to expand their existing range outside of the recovery zones, as evidenced by the verified records of grizzly bears in or near the action area.

Grizzly bears outside the recovery zones probably experience a higher level of adverse impacts due to land management actions than do grizzly bears inside. Currently, the number of grizzly bears on the Forest is very low. As anticipated in the recovery plan, we expect more grizzly bears will inhabit the Forest in the future, albeit slowly. We expect grizzly bears will occur in GBAUs on the Forest at much lower densities than within the Recovery Zone portion of the Forest, and at much lower densities than within other Recovery Zones. While the Forest Plan direction may have adverse effects on some of the individual grizzly bears that may use the action area now and into the future, considering the large size of the recovery zones, favorable land management within the recovery zones, and the robust status of the NCDE and GYE grizzly bear populations, adverse effects on grizzly bears as a result of continued implementation of the Forest Plan would not have negative effects on the status of grizzly bears. Therefore, we

conclude that the Forest Plan is not likely to reduce the numbers, distribution, or reproduction of grizzly bears. Because the Forest Plan would not reduce the reproduction, numbers, or distribution of grizzly bears, and is located outside of the grizzly bear recovery zones, we conclude that the Forest Plan is not reasonably expected to reduce appreciably the likelihood of both the survival and recovery of grizzly bears. It is the Service's opinion that the effects of the Forest Plan on grizzly bears are not likely to jeopardize the continued existence of the grizzly bear.

## **INCIDENTAL TAKE STATEMENT**

Section 9 of the Act, and Federal regulations pursuant to section 4(d) of the Act, prohibit the take of endangered and threatened species, respectively without special exemption. *Take* is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. *Harm* is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, including breeding, feeding, or sheltering. *Harass* is defined by the Service as an intentional or negligent act or omission that creates the likelihood of injury to listed wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. *Incidental take* is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement. This incidental take statement applies to the effects of access management and sanitation/food storage under the implementation of the Forest Plan.

The measures described below are non-discretionary and must be undertaken by the Forest so that they become binding conditions of any grant or permit issued, as appropriate, for the exemption in section 7(o)(2) to apply. The Forest has a continuing duty to regulate the activity that is covered by this incidental take statement. If the Forest (1) fails to assume and implement the terms and conditions or (2) fails to require an applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Forest must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 C.F.R. § 402.14(i)(3)].

### **Amount or Extent of Take Anticipated**

#### ***Access Management***

Based on research detailed earlier in this biological opinion, the Service has defined harm of grizzly bears in terms of adverse habitat conditions caused by high motorized route densities, and thus the lack of secure habitat, which displace individuals from key habitat to the extent that significant under-use of habitat by grizzly bears may occur. Using the best information on the effects of roads on grizzly bears, we conclude low amounts of secure habitat in portions of the action area are likely to result in a level of adverse effects to some female grizzly bears at some point in the future, primarily those that attempt to establish and maintain home ranges in the

action area during the life of the Forest Plan. Future road construction, permanent or temporary, may add to or increase the likelihood of such adverse effects. These adverse effects would result from displacement of grizzly bears from essential habitat. Displacement may result in significant under-use of key habitat when high linear road densities exist on the landscape or when secure habitat is low. The Service maintains that such under-use of otherwise suitable habitat within a grizzly bear's home range may constitute incidental take of grizzly bears through "harm" as a result of significant habitat alteration that impairs breeding, feeding and/or sheltering.

Based on information provided by the Forest and considered in this biological opinion, it is reasonable to assume that the amount of secure habitat in the will not substantially decrease in the next decade. However, some construction of and use of new permanent and/or temporary roads may be required for projects, and these roads may affect secure habitat. Temporary or permanent effects to secure habitat may increase the likelihood of disturbance or displacement to grizzly bears in or near the project area. The Forest has estimated that over the next 10 years, new motorized route construction and use (permanent or temporary) may affect up to a maximum of 5% of secure habitat Action Area-wide, which roughly equates to 31,400 acres or 2.6% of the total Action Area acreage. The Forest anticipates a maximum amount of net change of no more than 5% for the proportion of any given GBAU that provides secure habitat. Most new permanent routes are not expected to be open to the public. Some temporary roads may be very short in duration while other temporary roads may remain on the landscape for several years and receive a more substantial amount of vehicular use.

Based on the lack of verified female grizzly bears or potentially very low number of female grizzly bears using the action area, and considering the low levels of intra-specific competition, we do not expect that high route densities or low amounts of secure habitat would result in any take of grizzly bears (through displacement) at this time. However, the effects of displacement may increase somewhat as grizzly bear numbers increase over the life of the Forest Plan (roughly 10 years). Existing road densities in some areas and continued presence of these roads under the Forest Plan, along with new permanent and/or temporary road construction may at some point over the next 10 years result in incidental take of some individual female grizzly bears attempting to establish or maintain home ranges in the action area.

We anticipate that in a limited number of circumstances, over the life of the Forest Plan given the proposed Amendment and continued implementation of the Travel Plan, site specific conditions may result in significant displacement of adult females from key seasonal habitat. Such displacement may impair their ability to find adequate food resources, breed and raise young, and/or find shelter. We do not anticipate any take of subadult or male grizzly bears. Male grizzly bears have larger home ranges than females, and males and subadults are more mobile and do not have the same energetic needs as adult females. We also do not anticipate take of grizzly bears that are transient (moving through areas outside of home range use). Such individuals are highly mobile and not restricted to finding food and shelter within a home range. Thus, while displacement may affect behavioral patterns such as feeding or sheltering, we do not anticipate such effects would cause injury to transient, subadult, or male grizzly bears.

As detailed in this biological opinion, we anticipate that existing access management as well as future motorized route construction, including permanent and/or temporary roads, would affect only a very few adult females over the life of the Forest Plan because grizzly bears occur at very low densities in the action area, and females are expected to occur and possibly increase only

slowly over time in the action area. Also, substantial increases in road densities are not expected. If during the life of the Forest Plan, subadult females move into the action area seeking to establish a home range, they would be exposed to levels of roading that would factor in to home range selection, and that level of roading would not likely significantly increase over the life of the plan. Therefore, the take we anticipate would be harm to only a very low number of female grizzly bears inhabiting the action area over the life of the plan. We expect harm would be caused by significant under-use of key habitat in areas affected by high road densities to levels that result in decreased fitness and impaired reproductive potential. In other words, infrequently and in site-specific circumstances, an adult female grizzly bear wary of humans and human-generated disturbance may not breed at its potential frequency or may fail to complete gestation due to decreased fitness. We do not expect all adult female grizzly bears to suffer impairment of breeding, feeding, and/or sheltering, nor would we expect any female to experience permanent effects (lasting more than one reproductive cycle). Variables such as annual climate and resulting habitat and food resource conditions, the level of roading, and the number of grizzly bears using an area may change over time and are all factors influencing the displacement within a home range.

The effects of high road densities and lower amounts of secure habitat on individual female grizzly bears are difficult to quantify in the short term and may be measurable only as long-term effects on the species' habitat and population levels. The amount of take is difficult to quantify for the following reasons:

- 1) The amount of take would depend on the number of adult female grizzly bears impacted by the Forest Plan. We lack specific information on the precise number of adult female grizzly bears that will use the action area, but due to the location, number, and known-gender of verified grizzly bear occurrences in and near the action area, we reasonably assume very few adult females would be affected.
- 2) Individual grizzly bears would react differently to the disturbance. Not all adult female bears that are exposed to disturbances from high road densities would be adversely impacted to the point of take. Low numbers of grizzly bears would likely decrease intra-specific competition for habitat, allowing more options for individuals to move within home ranges, in many cases.
- 3) Some individual female grizzly bears that initially may be sensitive to disturbances may, over time, adjust to the routine disturbances generated by human activity over time.

Therefore, determining the precise amount of take, as defined by impaired reproductive potential (as affected by feeding and sheltering), is difficult. The amount of take would be also difficult to detect for the following reasons:

- 1) Grizzly bears are not easily detected or observed in the wild.
- 2) Reproductive rates of female grizzly bears vary naturally due to environmental and physiological causes.
- 3) A reduction in "normal" reproductive success is not discernable in the wild.
- 4) The reasons a grizzly bear fails to breed and/or failure to complete gestation are not discernable in the wild.

According to Service policy, as stated in the Endangered Species Consultation Handbook (March 1998) (Handbook), some detectable measure of effect should be provided, such as the relative

occurrence of the species or a surrogate species in the local community, or amount of habitat used by the species, to serve as a measure for take. Take also may be expressed as a change in habitat characteristics affecting the species (Handbook, p 4-47 to 4-48). In instances where incidental take is difficult to quantify, the Service uses a surrogate measure of take. The number of grizzly bears that use the action area is unknown and female grizzly bears have yet to be verified within the action area. The mechanism of female grizzly bear dispersal makes it likely that in most of the action area, only relatively few female grizzly bears would occupy the action area during the life of the Forest Plan. Therefore, for reasons explained above, the Service anticipates that incidental take of adult female grizzly bears would be very low and occur only infrequently over the life of the Forest Plan in the form of harm related to the displacement effects of high road densities and temporary road construction and use.

We use the existing amounts of secure habitat in the action area, along with an additional 5% net reduction in secure habitat within the entire action area and a 5% net change in the proportion of any given GBAU that is secure habitat as our **first surrogate measures of incidental take**. These effects to secure habitat could be permanent reductions, due to construction of permanent roads, or they could be temporary reductions in the effectiveness of secure habitat due to construction or temporary use of roads or motorized routes. Thus the changes are thus anticipated as a net change from the baseline at any given point in time.

**Table 4. Baseline secure habitat, and proportion of each GBAU that provides secure habitat for grizzly bears on the Bitterroot National Forest, Baseline and 5% reduction.**

	Total Size of GBAU (acres)	Baseline Amount of Secure Habitat (acres)	Baseline % of GBAU Providing Secure Habitat	% of GBAU that is secure, given a 5% decrease from baseline %	Secure habitat acres in the GBAU given a 5% decrease from baseline % of GBAU that is secure
Bitterroot Ecosystem Recovery Zone in MT	245,677	244,737	100%	n/a <sup>1</sup>	n/a <sup>1</sup>
Burnt Fork Bitterroot River	100,140	32,580	33%	28%	28,039
Lost Horse Creek	88,114	50,150	57%	52%	45,819
Lower Bitterroot River	48,107	20,135	42%	37%	17,800
Lower East Fork Bitterroot River	88,665	12,662	14%	9%	7,980
Lower West Fork Bitterroot River	101,437	35,032	35%	30%	30,431
Skalkaho Creek	65,126	29,548	45%	40%	26,050
Sleeping Child Creek	96,619	13,568	14%	9%	8,696
Upper East Fork Bitterroot River	105,094	62,356	59%	54%	56,751
Upper West Fork East Bitterroot River	105,946	46,621	44%	39%	41,319
Upper West Fork West Bitterroot River	92,892	57,980	62%	57%	52,948
Warm Springs	58,175	21,836	38%	33%	19,198

<sup>1</sup>The Forest does not anticipate any net changes in secure habitat in the portion of the action area that is in the Bitterroot Ecosystem Recovery Zone in Montana. Therefore the 5% reduction does not apply.

**Error! Reference source not found.**4 displays the first surrogate measures of incidental take for the action area, using existing amounts of secure habitat in each GBAU. If the amount of secure



habitat available in the action area is reduced by more than 31,400 acres (i.e. if the total amount of available secure habitat is less than 595,805 acres) in any given “bear year” over the life of the Forest Plan (10 years), then the level of incidental take we anticipated in our first surrogate measure of take would be exceeded and therefore the level of take exempted would be exceeded. Likewise, incidental take would be exceeded if the available amount of secure habitat is reduced by more than the amount shown in Table 4 such that the Forest reduces by more than 5% the proportion of the GBAU that is secure habitat in any given “bear year.” The “bear year” is defined as April 1 thru Nov 30. If the amount of secure habitat is reduced, permanently or temporarily, more than the amounts listed above at any point in the bear year, the incidental take will be exceeded.

We do not anticipate that motorized access management in all portions of the action area would result in incidental take as some areas within an analysis area may have relatively low open motorized route densities and/or relatively high amounts of secure habitat. We anticipate that the likelihood of incidental take of females would be highest in those areas with a higher amount of motorized routes and/or lower amounts of secure habitat. We also do not anticipate that all new permanent and/or temporary roads constructed in the action area would result in incidental take. This would depend on such things as location and length of the road and the duration it would be on the landscape, its effects on secure habitat, as well as the potential for female grizzly bear occurrence.

Over the life of the Forest Plan (10 years) if the Forest decreases secure habitat by more than a 5% net decrease (31,400 acres), then the level of incidental take we anticipated in our first surrogate measure of take would be exceeded and therefore the level of take exempted would be exceeded. Under CFR 402.16 (1), reinitiation of consultation would be required.

### ***Food and Attractant Storage***

Human access into grizzly bear habitat can lead to the habituation of grizzly bears to humans. Developed sites can pose risks of unsecured attractants and food left by campers, hunters, and people using the sites. Habituated grizzly bears learn to seek out developed sites for food rewards. Habituation to human foods and attractants in turn increases the potential for conflicts between people and grizzly bears. Habituated grizzly bears often obtain human food or garbage and become involved in nuisance bear incidents, and/or threaten human life or property. These grizzly bears are considered food conditioned and generally experience high mortality rates as they are eventually destroyed or removed from the population through management actions.

As the number of grizzly bears increase and the number of people residing in and visiting the Forest increases, the Service assumes that the potential for grizzly bear-human conflicts related to food and attractant storage will increase as well. Therefore, habituation/food conditioning of grizzly bears may occur in the action area over the life of the Forest Plan. The potential remains for the incidental take of grizzly bears in the form of harm through uses of the Forest where grizzly bears may become habituated to people and food conditioned to anthropogenic foods. Such habituation/food conditioning results in the modification and significant impairment of natural feeding behavior. This impairment is significant in that it may ultimately result in the removal or death of grizzly bears due to necessary management removal for defense of human life or property. Thus, the potential for incidental take of grizzly bears through habituation and food conditioning will remain.

Incidental take such as habituation and/or modification of natural feeding behavior is difficult to quantify or detect. As explained earlier, in such cases the Service uses a surrogate measure of take. In this case, we anticipate that **the second surrogate measure of incidental take** resulting from the Forest Plan in the form of harm is proportional to the number of grizzly bears that are removed or killed within the action area for defense of human life or property, as a result of obtaining anthropogenic food or other attractants due to inadequate storage. We base this surrogate on the fact that both the level of take through harm and grizzly bear mortalities will be related to level of bear use in an analysis area, the level of human use, and whether a food storage order is in place or not.

The Forest Plan does not include a food and attractant storage order except in the Anaconda-Pintler wilderness area. No grizzly bear-human conflicts have been reported to date in the action area. However, without a Forest-wide order that includes the entire action area, the potential for conflicts between grizzly bears and humans remains more elevated than in areas with a food storage order.

Grizzly bears occur at very low numbers across the action area. As explained previously, we expect the number of grizzly bears to increase, but only slowly, over time during the life of the Forest Plan. As more grizzly bears begin to move through or frequent areas within the action area, we cannot rule out the possibility of conflict between grizzly bears and people as a result of inadequate food and attractant storage. Based on this information, we anticipate that **no more than one grizzly bear will be removed from the action area** during the life of the Forest Plan for management purposes related to food and attractant storage issues on National Forest System lands administered by the Bitterroot National Forest. This represents our surrogate measure for incidental take of grizzly bears in the form of harm through habituation and/or modification of natural feeding behavior in the action area due to Forest actions or lack of an order to require food and attractant storage. Bears removed for purposes other reasons would not be subject to this measure of take.

Therefore, should more than one grizzly bear be killed or removed from the action area at any time during for the life of the Forest Plan because it has become habituated in relation to food and attractant storage on National Forest System lands administered by the Bitterroot National Forest, incidental take will be exceeded and the Forest must reinitiate consultation with the Service. Additionally, should the level of incidental take associated with food and attractant storage reach, but not exceed, the anticipated incidental take level for either area, the Forest should informally consult with the Service regarding the adequacy of existing mechanisms to minimize potential take.

### **Effect of the take**

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species. The amount of incidental take described above is low. As detailed in this opinion, and according to the 1993 recovery plan (U.S. Fish and Wildlife Service 1993), the Forest Plan covers actions on lands outside of the recovery zones. Further, considering the grizzly bear recovery strategies (U.S. Fish and Wildlife Service 1993), incidental take of grizzly bears in the action area would not affect the recovery of grizzly bears. Finally, we expect that the Forest Plan direction would support at least a low number of grizzly

bears that move through or live within the action area, which may benefit these grizzly bear populations over the long term. Critical habitat has not been designated for the grizzly bear, therefore none would be affected.

### **Reasonable and Prudent Measures**

Biological opinions provide reasonable and prudent measures that are expected to reduce the amount of incidental take. Reasonable and prudent measures are those measures necessary and appropriate to minimize incidental take resulting from proposed actions. Reasonable and prudent measures are nondiscretionary and must be implemented by the agency in order for the exemption in section 7(o)(2) to apply. The Service has determined that the continued implementation of the Forest Plan adequately reduces the potential for and minimizes the effect of any incidental take that may result. Therefore, no reasonable and prudent measures are necessary.

### **Terms and Conditions**

As explained above, the Forest Plan will reduce the potential for or minimize the effect of incidental take. No additional reasonable and prudent measures are necessary, therefore no terms and conditions are needed with the exception of the reporting requirements.

### **Reporting Requirements**

To demonstrate that the Forest Plan is adequately reducing the potential for and minimizing the effect of any incidental take that may result, the Forest shall complete a biennial monitoring report and submit it to the Service's Montana Field Office by March 1 of each odd-numbered year for the life of the Plan. The report shall include:

1. A bi-annual report detailing current access management parameters within the action area, as related to metrics used to assess access management in this biological opinion. In particular, the report should include:
  - acres of secure habitat within each GBAU
  - total acres of secure habitat in the action area
2. An up-to-date record of grizzly bear-human conflict and/or the management removal of a grizzly bear resulting from improper storage of food or attractants. Notify the Service's Montana Field Office, within 72 hours of any grizzly bear-human conflict resulting from improper storage of food or attractants and/or the management removal or human-caused death of a grizzly bear due to food or attractant storage issues on the Forest.

### **Closing Statement**

The Service is unable to precisely quantify the number of grizzly bears that will be incidentally taken as a result of the Forest Plan. Therefore, we use surrogate measures for the amount of incidental take we anticipate. We use the existing levels of access management as well as future potential changes in secure habitat as our surrogate measure of incidental take related to access

management. We anticipate that no more than one grizzly bear will be removed from the action area related to food and attractant storage for the life of the Forest Plan.

We determined that the Forest Plan, with its incorporated objectives, goals and standards, adequately reduces the potential for and minimizes the effect of any incidental take that may result. Therefore, reasonable and prudent measures, with their implementing terms and conditions, were not provided. However, reporting requirements were included in order to demonstrate that the Forest Plan is adequately reducing the potential for and minimizing the effect of any incidental take that may result. If, during the course of the action, the level of take occurring exceeds that anticipated in this incidental take statement, such incidental take represents new information requiring reinitiation of consultation and review of the incidental take statement. The federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

## **CONSERVATION RECOMMENDATIONS**

Sections 7(a)(1) of the Act directs federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans or to develop information. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibility for the species.

1. Continue to manage access on the Forest to achieve lower road densities and high secure habitat, particularly in areas important for connectivity for grizzly bears. By managing motorized access, several grizzly bear management objectives could be met including: (1) minimizing human interaction and potential grizzly bear mortality; (2) minimizing displacement from important habitats; (3) minimizing habituation to humans; and (4) providing relatively secure habitat where energetic requirements can be met (Interagency Grizzly Bear Committee 1998). Additionally, lower road densities and higher secure habitat would also benefit other wildlife and public resources.
2. The presence of attractants is a major factor leading to the food conditioning and habituation, and the eventual direct mortality or management removal of grizzly bears. The Service recommends that the Forest add food storage requirements to permits and contracts when planning projects and pursue a Forest-wide food storage order. As grazing permits are evaluated, the Service recommends the Forest discuss with permittees their plans for timely removal of livestock carcasses and consider adding prohibitions on feeding supplemental grains or other livestock feed on grazing allotments. Management of garbage, food and livestock feed storage benefits grizzly bears as well as black bears and other carnivores. Human/carnivore and livestock/carnivore interactions would also be reduced, leading to a public safety benefit.

3. Grizzly bears concentrate in certain areas during specific time periods to take advantage of concentrated food sources or because the area provides a high seasonal food value due to diversity in vegetation and plant phenology (e.g., important spring for fall range). As grizzly bears begin using the Forest more regularly, where grizzly bear use is discovered or likely to occur and where practicable, delay disturbing activities during the spring in spring habitats to minimize displacement of grizzly bears.
4. Education for Forest visitors (including hikers, bikers, hunters, campers, and snowmobilers, among others) as well as Forest staff and contractors, continues to be an important part of reducing disturbance to bears and reducing the chances of negative human-bear interactions. Continue to work collaboratively with the IGBC, MT Fish Wildlife and Parks bear management specialists, U.S. Fish and Wildlife Service grizzly bear specialists, and non-government organizations to promote training in the use of bear spray, bear identification, and other ways to reduce conflicts with and mortality of grizzly bears.

## **REINITIATION NOTICE**

This concludes consultation on the effects of the continued implementation of the Forest Plan, including the proposed Elk Amendment and implementation of the Travel Management Plan, on grizzly bears. As provided in 50 C.F.R. § 402.16, reinitiation of formal consultation is required and shall be requested by the federal agency or by the Service, where discretionary federal involvement or control over the action has been retained or is authorized by law and: (a) if the amount or extent of taking specified in the incidental take statement is exceeded; (b) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (c) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (d) if a new species is listed or critical habitat designated that may be affected by the identified action.

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